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Maryland State College of Agriculture Bulletin

16

Vol. 13. No. 1 June, 1916

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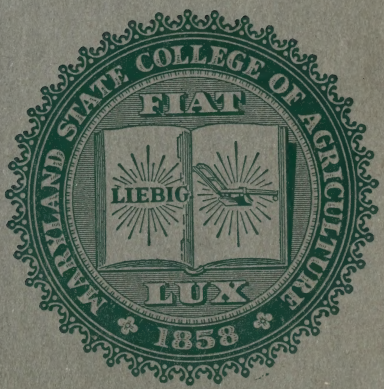
Catalogue 1916-17

1856-1916

The Maryland State College
of Agriculture
College Park, Md.

Issued monthly, excepting the months of November, December, January and February

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Persons wishing to receive the College Catalogue or desiring any information concerning the College or its work, may address

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Maryland State College of Agriculture
College Park, Md.

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THE

MARYLAND STATE COLLEGE

OF AGRICULTURE

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COLLEGE PARK, MARYLAND

1856 1916

CATALOGUE

1916-1917

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(ORGANIZED 1894.)

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(ORGANIZED 1896.)

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(ORGANIZED 1898.)

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Botany, Vegetable Pathology.

C. E. TEMPLE, M. S.,
Plant Pathology.

S. B. SHAW, B. S.,
Pomology.

J. R. CHRISTIE, B. S.,
Entomology.

W. C. TRAVERS,
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ANNA E. F. McCARTHY,
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(ORGANIZED 1914.)

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G. H. ALFORD, County Demonstration Work.
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C. E. TEMPLE, Plant Pathology.
S. B. SHAW, Pomology.
*C. L. OPPERMAN, Poultry Husbandry.
KATHARINE A. PRITCHETT, Home Economics.
REUBEN BRIGHAM, Boys' Club Work.
FLORENCE J. HUNT, Home Economics.
KATHLEEN C. CALKINS, Home Economics.

*Part time.

*F. B. BOMBERGER, Rural Organization.
*C. S. RICHARDSON, Rural Organization.
*H. T. HARRISON, Farm Accounts.
*T. H. TALIAFERRO, Rural Engineering.
*HARRY GWINNER, Farm Mechanics.
*MYRON CREESE, Electric Light and Power.
*W. M. HILLEGEIST, Correspondence Courses.

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Charles	CHARLOTTE POOLE, La Plata.
Dorchester	To be appointed.
Frederick	To be appointed.
Harford	FANNIE E. SAVILLE, Bel Air.
Kent	HELEN COMSTOCK, Chestertown.
Prince George	LILLIAN HENNAMAN, Upper Marlboro.
Talbot	OLIVE K. WALLS, Easton.

LECTURERS, 1915-1916.

In addition to the special lecturers, members of the College faculty lectured during the courses on Domestic Science, Soils, Crops, Farm Live Stock and Dairying, Poultry, Horticulture, Farm Mechanics and Good Roads.

SHORT WINTER COURSES.

ALLEN, H. H., State Roads Commission, Baltimore, Md.
ALLEN, R. S., Animal Husbandman, Maryland Experiment Station.
APPLEMAN, C. O., Physiologist, Maryland Experiment Station.
BALLARD, W. R., Pomologist, Maryland Experiment Station.
BELL, G. A., Animal Husbandman, U. S. Department of Agriculture.
BEIGHAM, A. A., Commercial Poultryman, Brinklow, Md.
BEIGHAM, REUBEN, Sheep Husbandman, Maryland Experiment Station.
BRINKLEY, E. H., Farm Superintendent, Maryland Experiment Station.
BROOKS, T. ROY, Farmer, Emmorton, Md.
BUTLER, S. F., American Association Cement Manufacturers, Philadelphia, Pa.

*Part time.

CHILDS, W. F., Jr., Maryland State Roads Commission, Baltimore, Md.
CLARK, H. M., Roads Engineer, Wicomico County, Md.
CLOSE, C. P., Horticulturist, U. S. Department of Agriculture.
COMSTOCK, HELEN, County Agent, Chestertown, Md.
CROSBY, W. W., Consulting Engineer, Baltimore, Md.
FEATHERSTONE, H. J., Automobile Engineering College, Washington, D. C.
HARRISON, E. P., Maryland State Roads Commission, Baltimore, Md.
HAYMAN, E. T., Roads Engineer, Anne Arundel County, Md.
HOLMES, F. S., Stone Fruits, Maryland Experiment Station.
HUBBARD, P., U. S. Office of Public Roads and Rural Engineering.
HUNT, FLORENCE J., Home Economics Department, College Park, Md.
KNIGHT, M. D., Roads Superintendent, Montgomery County, Md.
LEE, A. R., Poultry Specialist, U. S. Department of Agriculture.
LEFEVRE, D. P., Roads Engineer, Allegany County, Md.
MACKALL, J. N., Maryland State Roads Commission, Baltimore, Md.
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PRITCHETT, KATHARINE A., Home Economics Department, College Park, Md.
SCHNEPFE, F. E., Roads Engineer, Queen Anne's County, Md.
SCHMITZ, NICKOLAS, Agronomist, Maryland Experiment Station.
SHAW, S. B., Pomologist, State Horticultural Department, College Park, Md.
SLOCUM, ROBERT L., Poultry Specialist, U. S. Department of Agriculture.
SMITH, C. P., Seed Inspector, Maryland Experiment Station.
SQUIRES, J. H., E. I. Dupont de Nemours & Co., Wilmington, Del.
SUCRO, W. G., Roads Engineer, Baltimore County, Md.
TEMPLE, C. E., Plant Pathologist, State Horticultural Department, College Park, Md.
THOMPSON, H. C., Horticulturist, U. S. Department of Agriculture.
TOBIN, J. J., U. S. Office of Public Roads and Rural Engineering.
VEITCH, F. P., Lime Specialist, U. S. Department of Agriculture.
VOSHELL, J. T., U. S. Office of Public Roads and Rural Engineering.
WAITE, ROY H., Poultryman, Maryland Experiment Station.
WALDORF, H., Roads Engineer, Caroline County, Md.
WHITE, T. H., Vegetable Culturist, Maryland Experiment Station.
WINSLOW, D. H., U. S. Office of Public Roads and Rural Engineering.
WOLCOTT, G. E., Dairy Specialist, Maryland Experiment Station.
WOLSIEFFER, J. HARRY, Poultry Judge and Editor, Vineland, N. J.

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COLLIER, W. OSCAR, Easton, Md.
HARRY, D. G., Pylesville, Md.
HILL, RICHARD S., Director, College Park, Md.
HUDSON, J. F., Towson, Md.
JOHNSON, T. C., Norfolk, Va.
LOVE, GEORGE W., ————————, Ohio.
MARSH, G. F., Elkton, Md.
MONROE, JOHN F., Snow Hill, Md.
OSWALD, E. I., Chewsville, Md.
REESE, LINDSEY, Urbana, Ill.
SAPP, C. H., ————————, Ohio.

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(The President is an Ex-officio Member of All Committees.)

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CATALOGUE Messrs. T. H. Taliaferro, Spence, Metzger, Broughton, and Cory.

COURSES OF STUDY: Messrs. McDonnell, Spence, W. T. L. Taliaferro, Bomberger, Symons, T. H. Taliaferro, and Metzger.

DISCIPLINE: Messrs. Spence, McDonnell, T. H. Taliaferro, Harrison, and Broughton.

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PUBLICITY: Messrs. Brigham, Richardson, Symons, and Metzger.

SANITATION: Messrs. Griffith, McDonnell, W. T. L. Taliaferro, Buckley, and T. H. Taliaferro.

SCHEDULE: Messrs. Creese, McDonnell, Harrison, Cory, and Gwinner.

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STUDENT ENROLLMENT, RECORDS, CLASS AND QUARTER ASSIGN-
GLEE CLUB, DRAMATIC ASSOCIATION: Messrs. Richardson, Creese, Darrow, Bruce, and W. T. L. Taliaferro.

STUDENT PUBLICATIONS: Messrs. Richardson, Metzger, Bomberger, and Cory.

STUDENT RELATIONS: Messrs. Bomberger, Darrow, Richardson, Symons, and Ruffner.

SUMMER SCHOOL: Messrs. Metzger, Bomberger, Crisp, Beckenstrater, and Darrow.

CALENDAR.

FIRST TERM.

Tuesday, September 12th, and Wednesday, September 13th.—Entrance Examinations.
Thursday, September 14th, 1 P. M.—College Work Begins.
Thursday, November 30th.—Thanksgiving Recess.
Friday, December 22nd, 12 M.—First Term Ends.
Friday, December 22nd, 12 M., to Wednesday, January 3rd, 8 A. M.—Christmas Recess.

SECOND TERM.

Wednesday, January 3rd, 8 A. M.—Second Term Begins.
Wednesday, January 3rd.—Special Winter Courses Begin.
Thursday, February 1st.—Filing Subjects of Theses.
Saturday, March 17th.—Second Term and Special Winter Courses End.

THIRD TERM.

Monday, March 19th.—Third Term Begins.
Wednesday, April 4th, Noon, to Wednesday, April 11th, 8 A. M.—Easter Recess.
Tuesday, May 15th.—Submitting of Theses.
Friday, June 1st.—Final Meeting of Trustees.
Sunday, June 3rd.—Baccalaureate Sermon.
Monday, June 4th.—Class Day.
Tuesday, June 5th.—Alumni Day.
Wednesday, June 6th, 11 A. M.—Graduation Day Exercises.
Friday, June 8th.—Examinations for Promotion Begin.
Friday, June 15th.—Examinations for Promotion End.

1916

JULY

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1917

JANUARY

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MARYLAND STATE COLLEGE OF AGRICULTURE

HISTORY

"An act to establish and endow an agricultural college in the State of Maryland" was passed by the Legislature of the State in 1856, and is found in Chapter 97 of the Laws of Maryland for that year. The scope of this act of incorporation is shown by the preamble, which reads as follows:

> WHEREAS, It has been represented to the Legislature, that certain wise and virtuous citizens are desirous of instituting and establishing in some convenient locality within this State, an Agricultural College and Model Farm, in which the youthful student may especially be instructed in those arts and sciences indispensable to successful agricultural pursuits; and
>
> WHEREAS, It doth appear to this Legislature, that while the wise and learned in the present age hath cultivated with laudable industry, and applied with admirable success the arts and sciences to other pursuits, the most necessary, useful and honorable pursuits of agriculturists have so far been lamentably neglected; and
>
> WHEREAS, It is the province and duty of the Legislature to encourage and aid the philanthropic citizens in their efforts to disseminate useful knowledge by establishing an Agricultural College and Model Farm, which shall, in addition to the usual course of scholastic training, particularly indoctrinate the youth of Maryland, theoretically and practically, in those arts and sciences, which with good manners and morals, shall enable them to subdue the earth and elevate the State to the lofty position its advantages in soil, climate, etc., and the moral and mental capacities of its citizens, entitle it to attain.

This was the first effort in the Western Hemisphere to use scientific investigation for the advancement of the vocation of Agriculture, since at that time no other institution of a similar character existed in the United States. Under the charter thus granted to a party of public-spirited individuals, the original College building was erected, and its doors were opened to students in the fall of 1859.

For three years it was conducted as a private institution. In 1862, the Congress of the United States, recognizing the valuable work in the cause of practical education which such colleges could achieve for the country passed the "Land Grant Act." This Act granted each State and Territory which should claim its benefit a proportionate amount of unclaimed Western lands, in place of scrip, the proceeds from the sale of which should apply under

certain conditions to the "endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." This grant having been formally accepted by the General Assembly of Maryland, and the Maryland Agricultural College being named as the beneficiary of the grant, the College thus became, in part, at least, a State institution. In the Fall of 1914, the College became, wholly, a State institution.

During recent years the College has made a steady growth. This fact is evidenced by the increased number of students availing themselves of its facilities; by the erection of many new buildings—the library and gymnasium building, the chemical laboratory, Morrill Hall, the sanitarium, the engineering building, and Calvert Hall; as well as by the establishment of the Departments of Farmers' Institutes and Extension Work, and the State Departments of Chemistry (Fertilizer, Feed and Agricultural Lime Control), Horticulture, Entomology and Vegetable Pathology. As a consequence of its development under such favorable auspices the institution has become the most important factor in the agricultural and industrial development of the State.

The State Bureau of Forestry co-operates with the College, the Director being, by the terms of his appointment, Lecturer on Forestry at the College.

In 1916 the General Assembly granted a new charter to the College and changed its name from "The Maryland Agricultural College" to "The Maryland State College of Agriculture."

LOCATION AND DESCRIPTION.

The College is located in Prince George's county, Maryland, on the line of the Washington Branch of the B. & O. R. R. eight miles from Washington, and thirty-two miles from Baltimore. At least nine trains a day from each city stop at College Station, thus making the place easily accessible from all parts of the State. Telephone connection is made with the Chesapeake and Potomac lines.

The College grounds front on the Baltimore and Washington Boulevard. The suburban town of Hyattsville is two miles to the south, and Laurel, the largest town in the county, is ten miles to the north on the same road. Access to these towns and to Washington may be had by steam and electric railway. The site of the College is particularly beautiful. The buildings occupy the crest of a commanding hill, which is covered with forest trees, and overlooks the entire surrounding country. In front, extending to the Boulevard, is a broad, rolling campus, the drill ground and athletic field of the students. In the rear are the farm buildings and barn. A quarter of a mile to the northeast are the buildings of the Experiment Station. The College farm contains about three hundred acres, and is devoted to fields, gardens, orchards, vineyard, poultry yards, etc., used for experimental purposes and demonstration work in agriculture and horticulture.

The general appearance of the College grounds is exceedingly attractive. They are tastefully laid off in lawns and terraces which are ornamented with shrubbery and flower beds. The view from the grove and campus cannot be surpassed.

The location of the College is healthful; the sanitary conditions are excellent. No better proof of this can be given than that there has been practically no serious case of illness among the students for many years.

COLLEGE BUILDINGS.

The original College building completed in 1859, and the administration building completed in 1904, and connected with the former by a covered bridge, were completely destroyed by fire on the night of November 29, 1912. A temporary assembly hall, kitchen and dining hall have been erected and are now in use. Living rooms for a part of the students are available in Calvert Hall, the dormitory constructed in 1914, and in several houses on the College campus.

In 1894 the building used as the library was erected. It is well-lighted and commodious.

The Departments of Civil, Electrical and Mechanical Engineering and the Departments of Physics and of Mathematics are located in the two-story brick building erected in 1896, the brick annex,

erected in 1904, and the brick addition constructed in 1909. This latter, which consists of a main building four stories in height and a wing three stories in height, is so arranged as to form with the buildings previously erected a concrete whole. In this group of buildings are found laboratories of various kinds, wood and machine shops, a forge room and foundry, drawing rooms, blue print rooms, instrument rooms, lecture rooms, offices, a library room, lavatories, lockers, etc. The equipment is modern in every respect and the facilities for work in the above named departments have been greatly increased.

The chemical building was completed in 1897, and is now thoroughly equipped. It contains several lecture rooms and laboratories for practical work and the analysis of fertilizers, feeding materials for domestic animals, and agricultural lime. This work is assigned by Acts of the General Assembly to the Professor of Chemistry at this College, who is thereby constituted State Chemist.

Morrill Hall, erected in 1898, provides laboratories, lecture and class rooms, a dark room and storage rooms for the Agricultural and Biological Departments. The extensive insect collections of past and present State Entomologists, and the State Herbarium are housed in this building. The Departments of Entomology and Botany have a small greenhouse attached to Morrill Hall for use as an insectary and propagating house. In addition, several class rooms and offices are used by the Departments of Economics, English, Agricultural Education and Languages.

The Horticultural Building completed in 1915 provides class rooms, propagating shed and offices, opening into a range of nine greenhouses and a conservatory abutting on the south wall of the building. The main building is 200 feet long, and the adjoining greenhouses 50 feet by 20 feet each. This equipment furnishes ample accommodations for laboratory work in horticulture and is comparable to the best in the country.

The College Sanitarium, completed in 1901, is being used, temporarily, as the Administration Building.

GENERAL AIM AND PURPOSE.

The College is the State school of science and technology. While seeking, first of all, to perform the functions of an

agricultural college, its sphere of work has been widened to embrace all the sciences akin to agriculture, and all the arts related to mechanical training. To these special and prominent lines of work have been added such branches of study as are necessary for a liberal education, for the development of the intelligent citizen and for general culture. The purpose of this college is to give young men anxious to prepare themselves for the active duties of life such training in the lecture room, laboratory and field as will enable them to take their places in the industrial world well prepared for the fierce competition of the day.

Recognizing that such an education, in order to be of practical advantage to many, must be offered at a cost within the means of all, the expenses for the year to the student have been reduced to the point where his college dues are not in excess of his ordinary daily expenses. It is to be remembered that the College is a State institution, in part supported by the State, in part by the Federal Government through its several endowment Acts, and that it is in no sense a money-making institution, but simply a medium of disbursement by the Government to those upon whom the safety, progress and prosperity of the State so largely depend.

While the College provides, as will hereafter be explained, several distinct courses of instruction, looking to the special training of the student in agriculture, engineering and science, the fact is clearly kept in view that a sound foundation must be laid for each and every course. Successful specialization is only practicable after the student has prepared for it by a thorough training in the essentials. All education must be narrow and one-sided which does not provide for the general culture of the student, and which does not look first to the natural and normal development of the individual. That the aim of the College is to train the student in a specialty without sacrificing his development in general culture is shown in the description of the general working plan given in the next paragraph.

It begins with the student in the first or Freshman year with a systematic and carefully adjusted scheme of work, differing but little in the several courses, and looking to his general development in mental strength, range of information and power of expression and thought. At the beginning of the second or Sophomore year

the differentiation may be said to begin along those lines for which he shows most natural aptitude. This gradual specialization continues during the third or Junior year, until in the last or Senior year, his work consists chiefly of a few closely correlated topics, in which he is thus able thoroughly to prepare himself. With the present equipment of the laboratories and work-shops a student is able to become so proficient in his chosen line of work that when he leaves the College a successful career is open to him.

The Maryland State College of Agriculture is, logically, the crowning point of the public school system of Maryland. Its aim in particular is to provide a higher education for the graduates of the county high schools. To this end its curriculum is adjusted to meet the preparation of such students. It is this class of young men that the College is specially desirous of reaching. Experience has shown that our most satisfactory students come as graduates from the county schools, and no efforts will be spared to make the transition from the high school to the College a possible one for all those actuated by an earnest desire to complete their education.

DEPARTMENTS OF THE COLLEGE.

AGRICULTURE—
 AGRICULTURAL EDUCATION.
 AGRONOMY.
 ANIMAL HUSBANDRY.
BOTANY AND VEGETABLE PATHOLOGY.
CHEMISTRY AND BACTERIOLOGY.
CIVIL ENGINEERING.
ECONOMICS, POLITICAL SCIENCE AND HISTORY.
ELECTRICAL ENGINEERING AND PHYSICS.
ENGLISH AND PUBLIC SPEAKING.
ENTOMOLOGY AND ZOOLOGY.
HORTICULTURE—
 POMOLOGY.
 VEGETABLE CULTURE.
 LANDSCAPE GARDENING AND FLORICULTURE.
 FORESTRY.
LANGUAGES.
MATHEMATICS.
MECHANICAL ENGINEERING.
MILITARY SCIENCE.
PHYSICAL CULTURE.
SUB-COLLEGIATE INSTRUCTION.
VETERINARY SCIENCE.

The following pages give, under the several departments, the general character of the courses offered by each, and the main features of their equipment.

AGRICULTURAL EDUCATION.

PROFESSOR METZGER.

The work of this Department is designed to meet the demand for men, trained in agricultural and manual arts subjects, to teach in the high schools of the State.

In the arrangement of the courses the needs of the agricultural and manual arts teacher have been kept in mind. The work how-

ever, is open to any who desire an insight into the educational principles and problems of teaching vocational subjects.

The practice teaching is arranged to give the students of this Department experience in conducting class work and laboratory and field exercises. In addition, arrangement is made whereby the student receives both instruction and experience in the teaching and supervision of elementary industrial work in secondary schools.

COURSES OFFERED.

1. Psychology. Principles of psychology. Lectures and textbook.

Text used: Angell's "Psychology."

Junior Year—First Term, 4 theoretical and 2 practical periods per week.

2. History of Education. Outline of the historical development of modern education.

Text used: Monroe's "Brief Course in the History of Education."

Junior Year—Second Term, 4 theoretical periods per week.

3. Principles of Education. Study of the principles and methods of modern education.

Text used: Bagley's "The Educative Process."

Junior Year—Third Term, 4 theoretical periods per week.

4. Secondary School Agriculture and Manual Training. The purpose of this course is the preparation of the student for the teaching of agricultural or manual training subjects through a knowledge of the educational aims, and of the principles applying to the choice of subject matter. The course involves a study of the recitation in its parts, the methods of conducting and the function of laboratory, shop, and field exercises, and the correlation of these with other subjects.

Senior Year—First Term, 3 theoretical and 2 practical periods per week.

5. Organization and Materials. A course in the organization of courses of study, demonstration projects, and the selection of materials for the work in agriculture and manual training in secondary and elementary schools. This course is designed to ac-

quaint the student with the materials and equipment necessary for the successful teaching of secondary school sciences and arts, scope of work, order of presentation and the sources of supplies and equipment for recitation and laboratory work. The function and the use of school land and of home demonstration work are considered.

Senior Year—Second Term, 3 theoretical and 2 practical periods per week.

6. Rural Organization. A course in which the aims, the functions, the methods of organization, and the relation of rural to city institutions are considered.

Senior Year—Third Term, 3 theoretical and 2 practical periods per week.

7. Research and Thesis. The subject and lines of work to be arranged with the head of the Department. The purpose of the thesis is to study special problems in agricultural education.

Senior Year—Second and Third Term, 2 practical periods per week.

8. Rural Organization. Methods of organization in rural communities and similar problems are considered in this course.

Second Year—Third Term, 2 theoretical periods per week.

AGRONOMY.

PROFESSOR TALIAFERRO.
PROFESSOR METZGER.
MR. BRUCE.

The Department of Agronomy takes up the agricultural work pertaining to the field and its crops. A number of courses are offered. These treat of farm crops, their classification, soil and climatic adaptations, culture and improvement; soils, their physical and chemical properties, methods of treatment for maintenance and increase of productiveness; soil amendments, as manures, fertilizers, cover crops and lime; farm drainage; and farm management.

The College farm consists of two hundred and sixty-five acres of land and is operated by the Maryland Agricultural Experiment Station together with an adjoining leased farm.

Students of the College are kept in close touch with the general and experimental work on these farms which offer an unusual variety of soils and crops for observation and study.

Many of the students, who wish to do so, find work at fair wages on the farm and are thereby enabled to pay a part of their expenses as well as to gain valuable experience.

Well-equipped soil and crop laboratories, and a greenhouse devoted to the use of the Agronomy Department afford exceptional opportunities for the accurate study, at all seasons, of the scientific principles involved in the handling of soils and the production of farm crops.

COURSES OFFERED.

20. Farm Crops. A systematic study of the forage and cover crops of the United States, with special emphasis as to Maryland conditions, distribution, classification, economic importance, and cultural methods.

Freshman and Junior Year—Third Term, 3 theoretical and 2 practical periods per week.

21. Farm Crops. A detailed study of the cereal crops, including their history, distribution, adaptation, cultivation, harvesting, and marketing. Special attention is given to corn production.

Sophomore Year—First Term, 2 theoretical and 2 practical periods per week.

22. Soils. A course dealing with the origin, classification, and the physical and chemical properties of soils in their relation to tillage and the maintenance of soil fertility. Field excursions will be made to study soil formation, problems of drainage, etc.

The study of soils is conducted by means of lectures, text-books, and laboratory work.

Sophomore and Senior Year—First and Second Term, 2 theoretical and 4 practical periods per week.

23. Fertilizers. Of vital interest to the eastern and southern farmer of the present day is the fertilizing question. Between it

and the profit and loss account is a very close connection, and frequently a lack of knowledge of the subject entails upon the farmer both the loss of money paid and of the possible increase of the crop. In this course the subject is developed logically from the needs of the plant and the efficiency of the soil to the selecting of the proper plant foods for each crop under varying conditions of soil and climate. Special attention is given to the home-mixing of fertilizers.

Sophomore Year—Third Term, 2 theoretical and 4 practical periods per week.

24. Principles of Soil Management. Prerequisite, Soils 22. A laboratory course dealing with special problems of soil management and soil analysis intended for students specializing in agronomy. Special attention will be given to the study of soils from the College farm, which have been subjected to different methods of cropping and treatment.

Junior Year—First Term, 4 practical periods per week.

25. Grain Judging. This course consists of a critical comparative study of the cereals and other farm seeds from the standpoint of market grading and fitness for seed purposes. It is designed so to familiarize the student with the subject that he may not only handle his own crops to the best advantage, but may also be qualified to act as a judge at county fairs, grain shows, etc. Instruction is given by means of laboratory practice and lectures. This course is given to students in the Rural Engineering Course in the Senior Year.

Junior Year—Second Term, 1 theoretical period and 4 practical periods per week.

Senior Year—Second Term, 2 practical periods per week.

26. Advanced Farm Crops. A course dealing with the improvement by selection and breeding of the cereal and forage crops. Great care is given in this course to the study of the results obtained in plant breeding at the Maryland Experiment Station and the United States Bureau of Plant Industry Farm at Arlington, Virginia.

Senior Year—First Term, 2 theoretical and 4 practical periods per week; Second Term, 4 practical periods per week.

27. Advanced Soils. Prerequisite Soils 22. A course dealing with the study of the principal soil regions, series, and types of the United States, and specially of the soils of Maryland as to origin, formation, composition, and value from an agricultural point of view. This course is intended for students specializing in agronomy.

Students will be required to survey and map a given area of the College farm and make a report, including description of both the soils and subsoils, their physical properties, and the comparative value of the different soil types found.

Senior Year—First Term, 2 theoretical and 4 practical periods per week.

28. Farm Management. The course in farm management is designed to connect up the principles and practice which the student has acquired in the several technical courses and to apply them to the development of a successful farm business.

Economical production and disposition of products, maintenance and improvement of the producing units, and business methods in every operation, are as necessary to success in farming as in every other vocation and the effort is made to not only inculcate the necessity for these principles but to show how they may be adopted and practiced.

Senior Year—Second and Third Term, 2 theoretical and 4 practical periods per week.

29. Research and Thesis. To be arranged for with the head of the Department.

Senior Year—Third Term, 4 practical periods per week.

30. Farm Crops. A detailed study of the common farm crops. Lectures and practical work in field and laboratory.

First Year—First Term, 3 theoretical and 2 practical periods per week.

31. Soils. A study of the physical and chemical conditions of the soils in their relation to profitable agriculture. Lectures, laboratory and field work.

First Year—Third Term, 3 theoretical and 4 practical periods per week.

32. Advanced Agronomy. Students desiring to specialize in agronomy may arrange with the head of the Department for a special course during the second year. It is not required that all of the time scheduled be given to agronomy subjects. If thought best, a part may be given to agronomy and a part to animal industry or horticulture. Elective.

Second Year—First and Third Term, 4 theoretical and 8 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week.

33. Fertilizers. A study of the selecting of proper plant food for each crop under varying conditions of soil and climate. Special attention is given to the home-mixing of fertilizers.

Second Year—Second Term, 3 theoretical and 2 practical periods per week.

34. Grain Judging. Instruction is given in this course to fit the student to handle his own crops to the best advantage and to qualify him to act as a judge at county fairs, grain shows, etc.

Second Year—Second Term, 1 theoretical period and 4 practical periods per week.

35. Farm Management. Lectures and practice.

Second Year—Second Term, 2 theoretical and 2 practical periods per week.

36. Farm Forage Crops. A study of the forage crops of the United States, particularly those adapted to Maryland conditions.

Second Year—Third Term, 3 theoretical and 2 practical periods per week.

ANIMAL HUSBANDRY.

PROFESSOR RUFFNER.

MR. STANTON.

The Department of Animal Husbandry stands for all lines of work which pertain to the judging, selecting, breeding, feeding, development, care and management of the various breeds and classes of domesticated animals. Good herds of stock are being established at the Maryland Agricultural Experiment Station which are of use

to the student in his studies. In addition to the supply of stock on the farm the proximity of the College to Washington and Baltimore makes it possible for the student to get excellent material for study.

It is quite evident that there is but one way to make a young man a proficient judge of live stock, and that is by training the eye. In all of the lecture and laboratory work outlined in the courses the work is demonstrated with living specimens.

Junior and Senior students taking this course are sent to farms throughout the State of Maryland to supervise advanced registry tests for the dairy associations. These trips give the students the advantage of observing the most up-to-date dairy farms in the country, in addition to practical experience. Each year a judging team consisting of three students participates in the student's contest in judging dairy cattle at the National Dairy Show. Students in any of the agricultural courses are eligible to compete for a place on this team. The selection of students for the team is based upon ability and efficiency in this line of work.

Students desiring to specialize in any line of live stock are allowed to do so and animals are furnished for the special purpose whenever possible.

COURSES OFFERED.

40. Breeds and Judging. This course is devoted to the detailed study of all breeds and classes of live stock. The practical work commences with a study of the animal form by the use of the score-card. Special attention is given to the relation of form to function. First, the productive types are firmly fixed in the student's mind; then more specific breed characteristics are taken up. In teaching this work living specimens and lantern slides are used.

References, text-books and lectures.

Freshman Year—First Term, 1 theoretical period and 4 practical periods per week.

41. Elementary Live Stock Management. Lectures are given on the housing, feeding, care and management of dairy cattle, beef cattle, horses, sheep and swine. The practical work consists

of the application of the principles developed in the lectures and takes up the drawing of barn plans and other stable conveniences. The last few weeks of this term are devoted to a special study of the testing of milk and milk products.

References and lectures.

Freshman Year—Second Term, 3 theoretical and 4 practical periods per week.

42. Breeds and Breeding. One afternoon of each week is devoted to the study of breeds and types of live stock. The student is taught the relative value of the different types, special attention being given to the market classes and grades of live stock. Horses are studied from the standpoint of those most valuable to the farmer on the farm and those demanded by cities and the U. S. Army. The term is divided so as to give the study of horses, beef cattle, sheep and swine an equal amount of time. This course includes excursions to live stock shows and noted breeding farms.

Junior Year—First Term, 4 practical periods per week.

43. Animal Nutrition. This course embraces the principles and practice of animal feeding. After covering the principles of nutrition, it takes up the composition of feeding stuffs, their combination into properly balanced rations, and the relation between the sustenance of animals and their products. Many practical problems are solved. Students entering this course should have completed courses in organic chemistry and comparative anatomy and physiology.

Text-books, lectures and references.

Junior Year—Second Term, 3 theoretical and 2 practical periods per week; Third Term, 2 theoretical and 4 practical periods per week.

44. Principles of Breeding. This course takes up the principles and practices involved in the improvement of domestic animals, including the subjects of reproduction, variation, heredity, selection, line breeding, inbreeding, cross-breeding, grading and a historical study of the results.

Junior Year—Second Term, 3 theoretical periods per week.

45. Animal Husbandry. Fundamental principles of animal husbandry and their relations to soil fertility and farm economy.

This course is given to students in rural engineering.

Lectures, references, laboratory work, and field excursions.

Junior Year—Third Term, 2 practical periods per week.

46. Stock Judging. This is an advanced course in the judging of live stock. The major portion of the work is done by the method of comparative judging, similar to county and state fair work.

Text-books, references and lectures.

Junior Year—Third Term, 2 theoretical and 4 practical periods per week.

47. Animal Nutrition. This advanced course is given so that each student can make a special study of animal production, including a consideration of successful practices in feeding for market, fitting for show, and the management of the breeding herd or flock. Independent work is allowed such as rearing for mutton and wool; production of winter lambs; fitting horses for sale; and methods of handling and training horses.

Senior Year—First Term, 3 theoretical and 4 practical periods per week.

48. Farm Dairying and Dairy Manufactures. This course takes up a study of the care and handling of milk and cream on the farm, centrifugal separation, clarification, pasteurization, the manufacture of frozen products, neufchatel and cottage cheese, the preparation and marketing of fermented milk drinks, preparation and use of starters, farm butter making, determination of moisture and salt in butter under creamery operation, determination of specific gravity and total solids in milk by means of the lactometer, and the per cent. of fat in ice-cream, evaporated milk, and condensed milk with the Babcock machine.

References and lectures.

Senior Year—First Term, 3 theoretical and 8 practical periods per week.

49. Dairy Management. This course is devoted to a study of the care, management and feeding of the dairy herd; selection and care of the herd bull; raising calves and heifers; improvement of the herd through breeding and feeding operations; pedigrees; keeping herd records and the practical applications of methods for the production of clean milk.

References and lectures.

Senior Year—Second Term, 2 theoretical and 4 practical periods per week.

50. Farm Poultry. This course takes up the methods of housing, natural and artificial incubation and brooding, feeding, breeds and disease of poultry.

Lectures, references and text-books.

Senior Year—Second Term, 3 theoretical periods per week.

51. Advanced Live Stock Management. The work to be done in this course is arranged by the head of the Department and the individual student. The student is to take some class of farm animals, feed and care for them. Each student is to satisfy the instructor that he can milk and feed dairy cows. Other animals besides dairy cows are used whenever desirable.

Senior Year—Third Term, 2 theoretical and 4 practical periods per week.

52. Research and Thesis. The lines of work and subjects to be investigated are to be arranged with the head of the Department. The object of this work is to develop independence and originality in the student, and also to give him a taste for personal investigation upon lines which are of particular interest to himself. The results of these investigations are usually incorporated in a thesis.

Senior Year—Second Term, 4 practical periods per week.

53. Breeds and Judging. The student begins with the breeds of live stock, making a thorough study of their development and characteristics and also of the pedigrees and performances of superior individuals among horses, cattle, sheep and swine. The practical part of the course is devoted to the judging of horses, dairy cattle, beef cattle, sheep and swine.

First Year—First Term, 2 theoretical and 4 practical periods per week.

54. Breeding. The main object of this course is to direct attention and to stimulate interest in the more tangible physical basis of heredity. A scientific study of the physical aspects of heredity leads to conclusions that fully accord with the teachings

of the work of our master breeders. It is the aim to limit discussion to points upon which scientific opinion is quite well agreed.

Text-books, lectures and references.

First Year—Second Term, 3 theoretical and 2 practical periods per week.

55. Dairying. This course takes up a study of the care and handling of milk and cream on the farm, centrifugal separation, pasteurization and the testing of milk and milk products.

First Year—Third Term, 3 theoretical and 4 practical periods per week.

56. Animal Industry. A study of the successful methods of operating farms devoted chiefly to live stock production and of the systems to be applied to Maryland conditions. The student may arrange with the head of the Department to utilize one-half of scheduled time in other Departments. Elective.

Second Year—First and Third Term, 4 theoretical and 8 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week.

57. Animal Feeding. This course embraces the principles and practice of animal feeding. After covering the principles of feeding it takes up the composition of feeding stuffs, their combinations into properly balanced rations, and the relation between the sustenance of animals and their products. Problems relating to balanced rations are solved.

Text-books, lectures and references.

Second Year—First Term, 3 theoretical and 2 practical periods per week.

58. Farm Poultry. A general course dealing with poultry house construction, yarding, fattening, killing, dressing, marketing and a brief description of the more common breeds. Demonstrations are given in the practices of handling poultry.

Second Year—Third Term, 2 theoretical periods per week.

BOTANY AND VEGETABLE PATHOLOGY.

PROFESSOR NORTON.

ASSOCIATE PROFESSOR ROSE.

The courses in botany are intended to give such knowledge of the vegetable kingdom as is a proper element in general culture; to train the student mind in observation, comparison, generalization and other mental processes essential to true scientific methods in any work; and to furnish a basis for practical studies directly connected with agriculture, since plants are the subjects dealt with in the field and garden. In addition to the courses in pure botany, others of special economic trend are given. These are specially for students in the Agricultural and Horticultural Courses, and take up such botanical studies of cultivated plants, plant diseases, etc., as may be useful in practical life to the professional farmer or gardener.

The equipment and means for illustration and demonstration consist of a reference library containing the principal botanical works needed by students, charts and maps, compound and dissecting microscopes, preserved specimens for illustration and a representative collection of Maryland plants; microtome and other instruments together with reagents and apparatus for histological work and physiological experiments; and a culture room, sterilizers, incubators and other facilities for the study of plant diseases.

Advanced students have an opportunity to observe the work being done in the laboratory of Vegetable Pathology and greenhouse of the State Horticultural Department and of the Experiment Station, and, if competent, to assist in the same. Special attention is given to students who wish practice in the treatment of plant diseases, as it is the desire of the Department to encourage young men to engage in this work as a business.

COURSES OFFERED.

60. General Botany. A course designed to give the student a view of the plant kingdom. Type specimens of the algae, fungi, liverworts, mosses, ferns and seed plants are studied in the field

and laboratory and careful drawings made of the various structures. In the study of each type, special attention is given to such points as habitat, nutrition and methods of reproduction.

Freshman Year—Third Term, 2 theoretical and 6 practical periods per week.

61. Plant Histology. The student becomes familiar with the cell and its parts and the different tissues of the various parts of the plant. Typical cells of the protective, strengthening, conducting, storage and meristematic tissues of the plant are studied and careful drawings made.

Sophomore Year—First Term, 1 theoretical period and 6 practical periods per week.

62. Plant Physiology. This course gives the student an understanding of the life processes of the plant. A set of fifty experiments is performed in the laboratory and greenhouse and the results carefully recorded. These experiments illustrate the essential facts of such processes as absorption and loss of water, photosynthesis, relation to the inorganic and organic elements, growth, movement and death.

Sophomore Year—Second Term, 2 theoretical and 4 practical periods per week; Third Term, 1 theoretical period and 4 practical periods per week.

63. Comparative Morphology and Classification. This course is an extension of course 60 and is required of all students specializing in biology.

Junior Year—First Term, 2 theoretical and 4 practical periods per week.

64. Economic Plants. Lectures are given on the names, classification, nativity and uses of the useful and detrimental plants of the world, and field and laboratory studies are made of the common cultivated plants. This is done with a view to enabling the student to know the scientific names and relationship of the plants with which he comes in contact.

Junior Year—Second Term, 1 theoretical period and 4 practical periods per week.

65. Microscopy of Foods and Drugs. The identification of various food and drug products and their adulterants by means of the microscope.

Junior Year—Third Term, 2 theoretical and 4 practical periods per week.

66. Vegetable Pathology. This includes microscopic and macroscopic examinations of parasitic fungi in their relations to diseases in higher plants, studies of the nature of disease in plants, physiological diseases, etc., together with the best known means for the prevention and control of diseases. Lectures, reference work, laboratory work and experiments in infection and treatment constitute the course.

Junior Year—Third Term, 2 theoretical and 4 practical periods per week.

67. Vegetable Pathology. This course is an extension of the above course and is required of students specializing in botany.

Junior Year—Third Term, 2 theoretical and 6 practical periods per week.

68. Advanced Botany. Elective courses for students of the Biological Course and for post-graduate students are offered in methods in plant pathology, botanical microchemistry, histology of trees, weeds and poisonous plants, seed testing, taxonomy or advanced work in any of the undergraduate courses before mentioned.

Senior Year—7 theoretical and 12 practical periods per week.

69. Research. Students electing botany devote a portion of their time in the Senior year to the completion of an original study of some botanical subject upon which they prepare the graduation thesis. The time scheduled is a minimum.

Senior Year—8 practical periods per week.

70. Seeds and Weeds. The student is taught to recognize the important weeds and the seeds produced by them.

First Year—First Term, 1 theoretical period and 4 practical periods per week.

71. Plant Diseases. A practical study of diseases of plants to enable the student to recognize them in the field. A course in sprays and spraying is given in cooperation with the Zoology

Department in which the student is taught methods of disease control.

Second Year—First Term, 2 theoretical and 2 practical periods per week.

CHEMISTRY AND BACTERIOLOGY.

PROFESSOR MCDONNELL.
PROFESSOR BROUGHTON.
MR. DENNIS.
MR. WHITE.

The Chemistry Department is charged with two distinct classes of work. (1) The licensing, inspection and analysis of fertilizers, feeds and agricultural lime sold in the State, the Professor of Chemistry being, *ex officio,* the State Chemist. The results of this work are published in a "Quarterly" bulletin which is sent free to all Maryland farmers who apply for it. (2) The instruction of students.

The Chemical Laboratory Building contains laboratories, office and balance room for the State fertilizer, feed and lime control work, lecture room, supply room and four other laboratories. In addition classrooms in Morrill Hall are used as are two bacteriological laboratories at the Experiment Station and the Experiment Station canning laboratory.

The laboratories are well equipped with standard apparatus and chemicals, chemical and assay balances, polariscopes, refractometers, spectroscopes, microscopes with high-power oil immersion lenses, etc. Each student is provided with a locker, reagents and apparatus and has the use of a working desk.

The Department is provided with a library of standard reference books on chemistry and related subjects, to which additions are made from time to time.

Instruction in chemistry is begun with the Second Term of the Freshman year. Laboratory work by the student is emphasized and special attention is given to elements and compounds of practical and economic importance. The first year is intended to give

the student that practical and theoretical knowledge of elementary chemistry which is essential in the education of every man, no matter what his vocation. It also serves as a foundation for advanced work in chemistry, if the Course in Agricultural Chemistry is chosen. The outline of Course in Canning may be found on page 103.

CHEMISTRY.

COURSES OFFERED.

80. General Chemistry. Recitations, lectures and practical work in the laboratory, where the student performs the experiments under the directions of instructors.

Text-book: McPherson and Henderson's "General Chemistry."

Freshman Year—Second and Third Term, 4 theoretical and 2 practical periods per week.

81. Metals and Qualitative Analysis. A continuation of course 80.

Sophomore Year—First Term, 2 lecture and 6 practical periods per week.

82. Qualitative Analysis. An advanced course for students in the Chemical Course.

Reference books: Treadwell and Hall's "Qualitative Analysis," and Prescott and Johnson's "Qualitative Analysis."

Sophomore Year—Second Term, 1 lecture period and 8 practical periods per week.

83. Quantitative Analysis. For students not taking the Chemical Course. A brief course illustrating some of the general principles in the quantitative study of chemistry. In the latter part of the course the students are given samples of fertilizers, feeds, butter, milk, etc., for analysis.

Text-book: Lincoln and Walton's "Quantitative Analysis."

Sophomore Year—Second Term, 1 conference period and 8 practical periods per week.

84. Theoretical Chemistry. A discussion of the fundamental laws and theories of modern chemistry, with laboratory work in electro chemistry.

Text-books: Le Blanc's "Theory of Electro Chemistry," and Watts' "Laboratory Course in Electro Chemistry."

Sophomore Year—Third Term, 2 lecture and 4 practical periods per week.

85. Mineralogy. This is a course of determinative mineralogy. The more important minerals are identified by their more characteristic physical and chemical properties, the blow-pipe being an important aid.

Text-book: Brush and Penfield's "Determinative Mineralogy and Blow-pipe Analysis."

Sophomore Year—Third Term, 1 lecture period and 4 practical periods per week.

86. Geology. A course in the history of dynamic, stratigraphic and physiographic geology. The latter part of the course is devoted to the geology of Maryland, specially as affecting the character of the soil, mineral wealth and other economic condition of the State.

Text-book: Chamberlin and Salisbury's "College Geology."

Junior Year—First Term, 2 lecture and 2 practical periods per week; Second Term ,2 lecture periods per week.

87. Organic Chemistry. For students taking the Agricultural, Biological and General Science Courses. Recitations and lectures.

Text-book: Remsen's "Organic Chemistry."

Junior Year—First Term, 4 theoretical periods per week.

88. Organic Chemistry. For students making a specialty of agricultural chemistry.

Text-books: Perkin and Kipin's "Organic Chemistry," and Gattermann's "Practical Methods of Organic Chemistry," translated by Schober.

Junior Year—3 lecture and 4 practical periods per week.

89. Quantitative Analysis. Consisting of gravimetric, volumetric, and colorimetric determinations. Samples are selected so as to illustrate the general principles of the work. The volumetric work consist of acidimetry, alkalimetry, iodometry, oxidation and reduction. Neatness and accuracy are insisted upon in the laboratory, and in the conference periods the chemistry and mathematics of each determination are thoroughly discussed.

Text-books: Olsen's "Quantitative Analysis," and Sutton's "Volumetric Analysis."

Junior Year—First and Third Term, 1 lecture period and 12 practical periods per week; Second Term, 1 lecture period and 14 practical periods per week.

90. Stoichiometry. Problems relating to analytical and applied chemistry.

Junior Year—1 theoretical period per week.

91. Agricultural Chemistry. The chemistry of soils, fertilizers, plant life, animal life, etc.

Text-book: Stoddart's "Chemistry of Agriculture."

Senior Year—First Term, 4 theoretical periods per week.

92. Agricultural Chemical Analysis. This is an advanced course in the analysis of fertilizers and fertilizing materials, feeding stuffs, butter, milk, sugar, starch, etc.

Senior Year—First Term, 12 practical periods per week.

93. Physiological Chemistry. Recitations and lectures.

Text-book: Hawk's "Physiological Chemistry."

Senior Year—First Term, 4 theoretical and 4 practical periods per week.

94. Physical Chemistry. In this course the student becomes familiar with the advanced theories of chemistry, and some of the methods employed by research chemists. The laboratory work consists of the determination of the boiling and melting points, lowering of the freezing point by substances in solution, determination of vapor densities, and combustion methods for the determination of carbon, hydrogen and nitrogen.

Text-book: Walker's "Physical Chemistry."

Senior Year—Second Term, 3 theoretical and 14 practical periods per week; Third Term, 3 theoretical periods per week.

95. Inorganic Chemistry. An advanced course covering more in detail the subject matter set forth in the general chemistry offered in the Freshman year.

Senior Year—Second and Third Term, 3 theoretical periods per week.

96. Industrial Chemistry. The study of the practical methods employed in the various chemical industries. Visits are made to

ice, fermentation, and gas plants; also to fertilizer, glass, iron and steel works, etc.

Text-book: Thorp's "Outlines of Industrial Chemistry."

Senior Year—Second and Third Term, 3 theoretical periods per week.

97. Advanced Agricultural Analysis.

Text-book: "Methods of Analysis of the Association of Official Agricultural Chemists."

Senior Year—Third Term, 8 practical periods per week.

98. Thesis. Investigation along agricultural chemical lines to be embodied in a graduating thesis. In addition to the time scheduled, a part of the work done under courses 93, 94 and 97 will be included.

Senior Year—Third Term, 6 practical periods per week.

99. Farm Chemistry. This course consists of an elementary study of general and agricultural chemistry, with special reference to the chemistry of plants, animals, fertilizers, etc. The course is offered to students taking the two-year Course in Agriculture.

Text-book: Kahlenberg and Hart's "Chemistry in Its Relations to Daily Life."

First Year—Third Term, 2 theoretical and 2 practical periods per week.

Second Year—First Term, 4 theoretical and 4 practical periods per week.

BACTERIOLOGY.

COURSES OFFERED.

100. Agricultural Bacteriology. Preparation and sterilization of routine and special media. Routine and special staining methods. Studies on the biochemical action of bacteria. The morphological and physiological characteristics of those organisms involved in the economy of nature, dairying, agriculture, etc. The bacteriological examination of milk and its products, soils and foods. Practical demonstrations of problems in immunity.

Text and reference books: Jordan's "General Bacteriology," Swithinbank and Newman's "Dairy Bacteriology," and Conn's "Agricultural Bacteriology."

Junior Year—Second and Third Term, 8 practical periods per week.

101. General Bacteriology. Preparation of media and stains. The practical application of various methods of sterilization. A study of the various procedures for anaerobic development and isolation of bacteria in pure cultures. Standard procedures for the examination of pure cultures supplemented by a routine determination of the morphological and physiological characteristics of pure cultures isolated from nature and having special functions in the field of agriculture, dairying and sanitation. The routine bacteriological examination of drinking waters, milk and its products, foods, soils and disinfectants. Lectures and practical demonstrations in immunity and resistance.

Text and reference books: Hiss and Zinnser's "General Bacteriology," Conn's "Agricultural Bacteriology," and Prescott and Winslow's "Bacteriology of Drinking Waters."

Senior Year—1 lecture period and 6 practical periods per week.

102. Bacteriology. Lectures and practical demonstrations of subjects pertaining to agricultural and dairy bacteriology, with emphasis on the bacteria in milk and soils.

Reference books: Swithinbank and Newman's "Dairy Bacteriology," and Lipman's "Dairy Bacteriology."

Second Year—Second Term, 4 practical periods per week.

CIVIL ENGINEERING.

PROFESSOR TALIAFERRO.

MR. SPRINGER.

The subjects pertaining to civil engineering are arranged with the object of emphasizing the fundamental principles through lectures and recitations in the class-room, supplemented by practical exercises in the field, drafting room and laboratory. Self-reliance being an essential factor in the success of an engineer, the student is encouraged in every way to develop this habit.

EQUIPMENT. In addition to minor engineering instruments, etc., the Department is at present equipped with three compasses, four transits and four levels.

The experimental laboratory contains a thousand pound Riehle cement testing machine and a hundred thousand pound Riehle machine for making tensile and other tests of the various kinds of materials. A description of this latter machine will be found on page 75, it having been purchased for the use of the Civil and Mechanical Engineering Departments. A description of the drafting and blue print rooms used by the Civil Engineering Department will also be found on page 75.

Some hydraulic apparatus of a character suited to the needs of the Department has been installed and other apparatus will be purchased as the funds permit.

TOURS OF INSPECTION—During the session members of the Senior and Junior classes, accompanied by an instructor, take trips for the purpose of making an examination of the different types of modern engineering construction.

COURSES OFFERED.

The subjects outlined, with one exception, constitute a portion of the curriculum of students in the Civil Engineering Course.

120. GENERAL ENGINEERING DRAWING. Isometric and cabinet projections. Perspective. Water coloring. Paper stretching. Blue printing. Ornamental lettering, round writing and title work. Floor plans, elevations and architectural details. Mapping contours and profiling. Conventional signs.

Freshman Year—First Term, 4 practical periods per week.

Junior Year—Second Term, 6 practical periods per week; Third Term, 8 practical periods per week.

121. SURVEYING. This course includes the use and adjustment of engineering instruments, the methods of land surveying, the plotting and computing of areas, dividing of land, the theory of the stadia, true meridian lines, leveling, topographical surveying, railroad curves and cross sectioning.

Texts: Raymond's "Plane Surveying," Hosmer and Breed's "The Principles and Practice of Surveying," and Pence & Ketchum's "Field Manual."

Freshman Year—Second Term, 2 theoretical periods per week; Third Term, 4 practical periods per week.

Sophomore Year—First Term, 4 practical periods per week; Second Term, 4 theoretical periods per week; Third Term, 2 theoretical and 4 practical periods per week.

Junior Year—First Term, 4 practical period per week.

122. MECHANICS. A study of statics, dealing with the composition and resolution of forces, moments, couples. machines, and laws of friction; and of dynamics, dealing with velocity, acceleration, laws of motion, work, energy, and applications to problems.

Junior Year—First Term, 4 theoretical periods per week.

123. RAILWAY ENGINEERING. A study is made of preliminary and location surveys, cross sectioning, calculation of quantities, etc.

Text: Allen's "Railroad Curves and Earthwork."

Junior Year—Second and Third Term, 3 theoretical periods per week.

124. BRIDGE AND STRUCTURAL DESIGN. This course includes the complete design and detailing of a steel roof truss and a plate girder; the detailing from standard commercial drawing sheets of floor beams, girders and columns; and the complete design of a bridge truss of either the Warren or Pratt type. The stresses are determined by both analytical and graphic methods.

Texts: Merriman and Jacoby's "Stresses," Cooper's "Bridge Specifications," "Cambria Hand Book," Thompson's "Bridge and Structural Design," and Merriman and Jacoby's "Bridge Design."

Junior Year—Second and Third Term, 2 theoretical and 4 practical periods per week.

125. MECHANICS OF MATERIALS. This course treats of the elasticity and resistance of materials of construction, and the mechanics of beams, columns and shafts.

Text: Merriman's "Mechanics of Materials."

Junior Year—Second Term, 3 theoretical periods per week; Third Term, 5 theoretical periods per week.

126. SURVEYING. This course is intended, primarily, to meet the needs of students in agriculture, horticulture, and engineering education. It includes the use of the compass, transit and level, one or more methods of land surveying, the plotting and computing of areas, leveling and topographical surveying.

Text: To be selected.

Junior Year—Third Term, 2 theoretical and 4 practical periods per week.

127. Practical Problems. The necessity for practical work on the part of those desiring to enter upon engineering as a profession is obvious. To meet this condition a number of hours have been scheduled for field and laboratory work in practical problems relating to engineering. The laboratory work includes the testing of cement and other materials of construction, various hydraulic experiments, the operation of engines, etc. The scheduled hours constitute a minimum, the student being encouraged to give as much more of his time as is possible to problems of this character.

Junior Year—Third Term, 8 practical periods per week.

Senior Year—First Term, 8 practical periods per week; Second and Third Term, 4 practical periods per week.

128. Farm Drainage. Students in agriculture continue course 126, the time being given to problems in drainage, particularly tile drainage.

Senior Year—First Term, 4 practical periods per week.

129. Concrete. A study of cement, concrete, and reinforced concrete construction.

Text: Hool's "Reinforced Concrete Construction."

Senior Year—First Term, 4 theoretical periods per week.

130. Hydraulics. The principles of hydraulics, flow through pipes, water supply, etc., are discussed in this course. This course is continued in the Second Term as hydromechanics.

Text: Lea's "Hydraulics."

Senior Year—First Term, 4 theoretical periods per week.

131. Estimates of Cost. Lectures are given on the methods of estimating cost and these are supplemented by problems of a practical nature.

Senior Year—Second Term, 1 theoretical period and 4 practical periods per week.

132. Geodesy. A study of the theory and methods of geodetic surveying.

Senior Year—Second Term, 3 theoretical periods per week.

133. Highway Engineering. This course includes the location, construction and maintenance of roads.

Text: Blanchard and Drowne's "Highway Engineering."

Senior Year—Third Term, 5 theoretical periods per week.

134. Contracts and Specifications. A study of simplicity and legality in the preparation of contracts and specifications in engineering works.

Senior Year—Third Term, 2 theoretical periods per week.

135. Farm Water Systems. An elementary course dealing with the water supply and the disposal of sewage on the farm.

Second Year—First Term, 4 practical periods per week.

136. Farm Drainage. An elementary course in the theory and practice of drainage.

Second Year—Third Term, 2 theoretical and 2 practical periods per week.

ECONOMICS, POLITICAL SCIENCE AND HISTORY.

PROFESSOR BOMBERGER.

The courses in this Department are specially designed to prepare young men for the active duties of citizenship. The first year of the Collegiate work is devoted to the study of modern history, which is followed by the principles of civil government, constitutional history, political economy (with especial reference to current, social, rural and industrial problems), and, finally, the elements of business and international law.

ECONOMICS AND POLITICAL SCIENCE.

COURSES OFFERED.

140. Civil Government. Study of the history and development of the Constitution of the United States.

Text used: Beard's "American Government and Politics."

Junior Year—First and Second Term, 3 theoretical periods per week.

141. Business Law. Principles of law as practically applied in everyday life and business.

Text used: Huffcut's "Elements of Business Law."

Junior Year—Third Term, 3 theoretical periods per week.

142. Political Economy. Principles of political economy and industrial development of the United States; rural economics; social science; and current problems.

Text used: Seager's "Principles of Economics."

Senior Year—4 theoretical periods per week.

143. Comparative Government. Study of the governments of the leading nations of Europe. Elective.

Text used: Ogg's "Governments of Europe."

Senior Year—First Term, 3 theoretical periods per week.

144. Municipal Governments. Study of typical modern municipal governments of the United States and Europe. Elective.

Senior Year—Second Term, 4 theoretical periods per week.

145. International Law. Elements of international law. Elective.

Text used: Davis' "Elements of International Law."

Senior Year—Third Term, 3 theoretical periods per week.

146. Rural Economics. Special study of rural economic problems. Elective.

Senior Year—First and Third Term, 3 theoretical periods per week; Second Term, 4 theoretical periods per week.

147. Business Law. A course for the students in the two-year Course in Agriculture on the principles of law as practically applied in everyday life and business.

Text used: Hamilton's "Practical Law."

Second Year—Second Term, 3 theoretical periods per week.

HISTORY.

COURSES OFFERED.

160. Modern European History. From the treaty of Westphalia to the present time.

Text used: Robinson and Beard's "Development of Modern Europe.'

Freshman Year—3 theoretical periods per week.

161. American History. Political and economic history of the United States with special reference to the nineteenth century. Elective.

Sophomore Year—First and Second Term, 5 theoretical periods per week; Third Term, 4 theoretical periods per week.

162. History. Selected Topics.

Junior Year—3 theoretical periods per week.

163. Advanced History. Elective.

Senior Year—First and Third Term, 3 theoretical periods per week; Second Term, 4 theoretical periods per week.

164. European History. Outlines from 476 A. D. to 1684 A. D. Prerequisite, Ancient History to 476 A. D. Elective.

Sub-Freshman Year—3 theoretical periods per week.

ELECTRICAL ENGINEERING AND PHYSICS.

PROFESSOR CREESE.

MR. HODGINS.

ELECTRICAL ENGINEERING.

The work of the Electrical Engineering Course is so arranged as to give the student a thorough understanding of the fundamental principles of the various branches of electrical engineering, and at the same time to teach him to apply these principles to the practical problems with which the engineer has to deal. This purpose is carried out by means of lectures and recitations in the class-room, supplemented by practical work in the laboratories and drawing room.

Equipment. The Electrical Engineering Laboratories are located in the east wing of the engineering building. The rooms on the first floor are used for lectures, recitations and experimental demonstrations by the instructor; a room on the second floor is equipped with apparatus for experimental work in telephone engineering; and the basement contains the dynamo room and the electrical engineering testing room.

The electrical engineering testing room is fitted up with such appliances as are used to the best advantage in engineering practice.

Special effort has been made to purchase only the best instruments, as the use of poorer grades influences the student unfavorably. With poor instruments he cannot be taught to do satisfactory work and he becomes careless in the handling of them.

Among other things the following apparatus has been purchased for the testing laboratory:

A Leeds and Northrup potentiometer and Weston standard voltmeter and ammeter for calibrating the various measuring instruments used in the laboratory. A Sharp-Millar portable photometer and a Queen & Co. standard photometer for measuring the candlepower of lamps and for determination of illumination intensities. A large number of portable ammeters, voltmeters, and indicating wattmeters for direct and alternating current measurements; standard curve drawing voltmeter and ammeter; electrostatic voltmeter; frequency meters; silver and copper voltameters; Siemen's type electrodynamometer; watthourmeters, both direct and alternating current. A Leeds and Northrup standard portable testing set; heating devices; condensers; tachometers; multiple circuit ammeter and voltmeter switches. D'Arsonval galvanometers; standard resistance boxes and bridges, including a very accurate decade resistance box and a decade resistance and Wheatstone bridge; double and single contact keys, condenser keys, etc.

The lamps used for experimental purposes include direct and alternating current multiple carbon arc, metallic arc, mercury vapor and nernst lamps.

A Curtis steam turbine, direct connected to a 35-kilowatt compound generator, has been installed for testing purposes. This may be used in connection with the College lighting plant when needed, and will be used for light and power service in the engineering building.

The laboratory is so wired that connection may be made readily with any part of the College lighting plant, with the turbo-generator or with any of the apparatus in the dynamo room.

The apparatus in the dynamo room includes the following: A 10-kilowatt rotary converter of the latest type with speed limit and end play devices. A 5 horse-power variable speed commutating pole motor. A 7.5 kilowatt, 60 cycle, 220 volt alternator designed to

operate either as a polyphase generator, synchronous motor, frequency changer, constant speed induction motor, or variable speed induction motor; the following parts are supplied with the set to make possible its operation in any of the above named ways;—a stationary armature for use either as an alternating current generator or as an induction motor field; a revolving field; a squirrel cage induction motor rotor with starting compensator having self-contained switches; an induction motor rotor with internal starting resistance; and an induction motor rotor with 3 phase collector rings, external resistance, and controller. A 2 kilowatt booster set, consisting of a series motor and shunt generator with armatures mounted on the same shaft. A 5 horse-power compound direct current motor and a 1.5 horse-power shunt motor fully enclosed. A 7.5 kilowatt, 120 volt, 3 phase self-excited generator direct connected to a 115 volt compound direct current motor. A motor-generator set consisting of a 3.6 horse-power shunt motor direct connected to a 2 kilowatt compound generator. A 3 horse-power, 3 phase induction motor. A 0.5 kilowatt shunt generator belt connected to a 0.5 horse-power variable speed shunt motor. A 0.5 kilowatt series generator and a 0.25 horse-power, 60 cycle, single phase, induction motor. Two 2 kilowatt transformers to transform power from 110 or 220 volts to 1100 or 2200 volts. Various types of starting rheostats with automatic overload and no voltage release; field rheostats.

The main switchboards, consisting of two blue Vermont marble panels on pipe supports, are used to mount the necessary circuit breaker, rheostats, switches, etc., to control the generators and motors as well as the various circuits in the dynamo room and testing laboratory. Wire and water rheostats are arranged for load and regulation. Portable lamp-boards are so arranged that they may receive, at the proper voltage, from 0.04 to 100 amperes current. Portable ammeter, voltmeter and wattmeter switchboards have been constructed for use in machine tests. In addition to the special electrical engineering equipment, the College lighting plant will be used for illustrative and experimental purposes. This plant contains, together with other apparatus useful in teaching electrical engineering, two Bullock generators of 40 kilowatts total

capacity, and a switchboard equipped with a number of Weston ammeters, voltmeters and circuit breakers, and various types of rheostats.

An 8-inch Waltham bench lathe, with all the necessary attachments, has been installed in the dynamo room for the use of students in practical thesis work, and for making small articles, such as binding posts, connectors, etc., for use in the laboratories.

The telephone laboratory is equipped with two demonstration sets which were made by the Western Electric Co.

The magneto set consists of an oak panel upon which is mounted the following apparatus: Two line circuits with combined jacks and signals; double wound supervisory drops; complete cord circuits including ringing and listening keys, operator's telephone set, magneto generator, etc. On one line circuit is connected a wall type subscriber's set, and on the other, a desk set.

The common battery set consists of an oak panel carrying the following equipment: Two line circuits with lamp signals; complete cord circuits, including ringing and listening keys, operator's telephone set, magneto generator, split repeating coils, condensers, retardation coil, supervisory lamps, etc. On one of the line circuits is connected a wall type subscriber's set, and on the other a desk set.

Both panels have all the wiring exposed to enable the student to make a complete study of these two principal types of telephone exchanges.

COURSES OFFERED.

The subjects outlined constitute the work in electrical engineering.

180. Elementary Electricity. This subject includes static electricity, dealing with the phenomena of electricity in its potential form, and the conception of electric potential, quantity, capacity, etc.; kinetic electricity, including the study of the fundamental laws and units, as Ohm's Law, Joules' Law, units of current, electromotive force, resistance, etc.; theory of magnetism, with its phenomena and forces; and electro-magnetism, which is the foundation for dynamo electric machine design and construction.

Text: Franklin and Macnutt's "Electricity and Magnetism."

Sophomore Year—Second and Third Term, 3 theoretical periods per week.

181. Elementary Electricity. A laboratory course designed to verify the laws and principles outlined in Electrical Engineering 180.

Sophomore Year—Second and Third Term, 2 practical periods per week.

182. Elementary Electricity and Magnetism. This subject is given to enable the student to gain a general knowledge of the applications of electricity to commercial work, and deals very little with the mathematical theories of the various laws and principles. The subject includes a study of the methods of generating, distributing and utilizing electrical energy for practical purposes, and is intended to make the student familiar with modern electrical apparatus and machinery.

Text: Jacksons' "Elementary Electricity and Magnetism."

Sophomore Year—Third Term, 3 theoretical periods per week.

183. Elementary Electricity. A laboratory course arranged to illustrate the theoretical work as outlined in Electrical Engineering 182.

Sophomore Year—Third Term, 2 practical periods per week.

184. Dynamos and Motors. This subject offers a short general course in direct and alternating currents. The study of various types of measuring instruments is followed by a general study of the operating characteristics of direct current generators and motors. The fundamental problems in single and polyphase circuits are taken up in detail; and finally a rather complete study is made of alternating current generators and motors, transformers and switchboard appliances.

Text: Franklin and Esty's "Dynamos and Motors."

Junior Year—First Term, 3 theoretical periods per week; Second Term, 4 theoretical periods per week.

185. Electro-Magnetism and Construction of Dynamos. Beginning with the Junior Year and extending throughout the course, the principles involved in the construction and operation of both direct and alternating current dynamos and motors are taught. In teaching this subject, special care is exercised that

the mathematical and graphical developments shall be concise and logical. The direct current machine is first examined, and this results in a discussion of the different forms of armatures, their windings, cores, commutators, etc.; the various fields; the methods of arranging the windings for different purposes; the shape and material of the magnetic circuits; the bearings, shafts, and bed-plates; the methods of insulation; a full description of the materials of construction; the selection of types suited to the performance of specific duties; and the proper method for installing and operating. The characteristic curves and efficiencies of the different types are also illustrated at some length.

Text: Franklin and Esty's "Dynamo Electric Machinery."

Junior Year—First and Third Term, 3 theoretical periods per week; Second Term, 4 theoretical periods per week.

186. Electrical Engineering Laboratory. This elementary course in testing includes the methods of measuring resistance, current and electromotive force; elementary photometry; and methods of making up connections on various types of machines.

Junior Year—First and Second Term, 4 practical periods per week.

187. Electrical Engineering Laboratory. The study of direct current instruments. The measurements of resistance, current, and electromotive force; the use of the Wheatstone Bridge and galvanometers; loop and capacity tests of cables; calibration of instruments; study of direct current machines; testing of arc lamps; photometry; the operation of machinery and determination of the characteristic curves and efficiencies of machines.

Junior Year—First and Third Term, 8 practical periods per week; Second Term, 4 practical periods per week.

188. Primary and Secondary Batteries. The theories involved in the primary cell are developed and attention is directed to the various measurements and calculations pertaining to the subject. A study is made of the construction and use of the latest types of commercial cells.

Following the preliminary work on the primary cell, the study of the lead storage battery is taken up in detail. The work includes the general theory, the mechanical construction and the

commercial use of the various types of cells, together with the chemical and electrical actions encountered. In connection with the storage cell a study is made of the construction and use of the different forms of the auxiliary apparatus, such as end-cell switches, boosters, etc.

Text: Lyndon's "Storage Battery Engineering."

Junior Year—Third Term, 2 theoretical periods per week.

189. Electric Machine Design. Practical calculation of dynamos, including detail calculations of field cores, armature windings, frames, commutator, armature core and collecting devices.

Junior Year—Third Term, 2 theoretical and 4 practical periods per week.

Senior Year—First Term, 4 practical periods per week.

190. Alternating Currents and Alternating Current Machinery. A complete study is made of the fundamental phenomena and theories dealing with the effects of alternating currents, both single-phase and poly-phase. Included in this course there are a large number of problems, both analytical and graphical, which are specially valuable for giving a clear appreciation of the effects of self-inductance, mutual-inductance, and capacity in single-phase and poly-phase alternating current circuits.

The theory, construction and practical applications of single-phase and poly-phase alternating current machinery, which includes generators, synchronous, induction and repulsion motors, rotary converters, transformers, regulators, etc., are taken in detail.

The fundamental principles of the machinery are developed in the class-room and applied concurrently in the laboratory and designing room with special reference to their practical utilization.

Texts: Franklin and Esty's "Alternating Currents," McAllister's "Alternating Current Motors," and Karapetoff's "Electric Circuit."

Senior Year—First and Second Term, 5 theoretical periods per week; Third Term, 3 theoretical periods per week.

191. Electrical Engineering Laboratory. The determination of inductance, impedance, condensance, etc.; measurement of power in alternating current circuits; regulation and efficiency tests of alternators and transformers; parallel operation of alternators; phase characteristics, power factor, etc., of synchronous

motors; poly-phase transformation; mesh and star connections of transformers; tests of induction and synchronous motors.

Senior Year—8 practical periods per week.

192. Electric Lighting. This work begins with the study of the different systems of distribution used in arc and incandescent lighting and the discussion of the advantages and disadvantages of each from both financial and engineering standpoints. Attention is given to the best methods of obtaining good regulation, as upon this satisfactory lighting service depends. The proper arrangement and wiring of switchboards and the instruments which they contain, as well as the latest methods of protection from lightning, are treated in detail.

The student is made familiar with the manufacture and characteristics of the incandescent arc and many new forms of electric lamps; the selection of lamps for specific commercial duties; the principles underlying correct interior and exterior illumination; the manufacture of cables for underground work; and the materials used in overhead and conduit systems of distribution.

The proper arrangement, the type and the size of boilers, engines and dynamos in a central station for lighting and power purposes, are obtained by the study of typical plants in this country and abroad. Many problems involving the calculation of the wire and materials needed for the various system of distribution are given. These problems require for their solution a knowledge of the rules of the Underwriters' Association.

Text: Franklin's "Electric Lighting."

Senior Year—First and Second Term, 2 theoretical periods per week.

193. Electric Power Plants and Transmission. A study of the principles underlying the lay-out of power-house and sub-station machinery and circuits for high tension transmission and distribution systems, including the determination of the most economical size of conductors for such systems. The course includes numerous original and practical problems illustrating the principles.

Senior Year—Second and Third Term, 2 theoretical periods per week.

194. Telephones and Telegraphs. This subject deals with the applications of electricity to telephony and telegraphy, with the details and construction of the instruments, switchboards and line work. In this course are included a study of telephone receivers and transmitters; the multiple switchboard; common battery circuits; manual and automatic exchanges; traffic regulation; intercommunicating systems; line construction; the effects of self-inductance, capacity and other disturbing influences; location of faults; simplex, duplex and quadruplex telegraphy; wireless telegraphy; and simultaneous telegraphy.

Text: Miller's "American Telephone Practice."

Senior Year—Second and Third Term, 2 theoretical periods per week.

195. Telephone Laboratory. The course consists of experimental work with telephone receivers, transmitters, induction coils, the effect of inductance, capacity, and resistance on the transmission of voice waves, and the operation of the magneto and common battery system of telephony.

Senior Year—Second and Third Term, 2 practical periods per week.

196. Electric Machine Design. This work includes the design of reactance coils, transformers, induction motors, alternator armatures, field windings and frames, and special problems in the transmission of power.

Senior Year—Third Term, 1 theoretical period and 8 practical periods per week.

197. Electric Railway Engineering. The student is made thoroughly familiar with the following topics relating to electric railway work; the power, capacity, arrangement and methods of installation of the engines and boilers; the type, method of control and disposition of the generators in the dynamo room; the proper arrangement of the switchboards and the instruments to be used; the line work, including the various trolley and conduit constructions; the method of laying the track, with the weight and bonding of the rails; the motor equipment and car wiring; the type, power and control of the motors and the requirements for special conditions; the applications of the storage battery; the cost of installa-

tion and operation of the power plant; the management of the plant; and the modifications required for high speed electric traction.

Text: Sheldon and Hausman's "Electric Traction and Transmission Engineering."

Senior Year—Third Term, 3 theoretical periods per week.

PHYSICS.

The physical lecture room and laboratory are located in the new engineering building, in rooms excellently adapted to the purpose. The Department is well supplied with apparatus for lecture room demonstrations and for students' individual laboratory work, and new pieces of apparatus are added to the equipment each year.

COURSES OFFERED.

200. MECHANICS AND SOUND. This course includes lectures, recitations, and demonstrations on mechanics, hydrostatics, molecular physics, and sound. A knowledge of plane trigonometry is required for entrance. Physics 203 must be taken at the same time.

Text: Carhart's "College Physics."

Sophomore Year—First Term, 3 theoretical periods per week.

Junior Year—First Term, 2 theoretical periods per week.

201. ELECTRICITY AND MAGNETISM. The elementary theory of electrical phenomena is carefully developed and considerable time is spent on the solution of problems illustrating the practical application of the various laws. Physics 204 must be taken at the same time.

Text: Franklin and Macnutt's "Electricity and Magnetism."

Sophomore Year—Second Term, 3 theoretical periods per week.

Junior Year—Second Term, 2 theoretical periods per week.

202. HEAT AND LIGHT. The general theory of the nature of heat is followed by detailed discussion of expansion, change of state, transmission and radiation of heat and the elements of thermodynamics. A careful study is made of the nature and propagation of light, the laws of reflection and refraction, dispersion, interference, etc. Physics 205 must be taken at the same time.

Text: Carhart's "College Physics."

Sophomore Year—Third Term, 3 theoretical periods per week.

Junior Year—Third Term, 2 theoretical periods per week.

203. Mechanics and Sound. A laboratory course consisting of a series of quantitative experiments arranged to illustrate and verify the laws and principles considered in the class-room and to develop in the student skill in manipulation and accuracy in making precise measurements. Physics 200 must be taken at the same time.

Sophomore and Junior Year—First Term, 4 practical periods per week.

204. Electricity and Magnetism. A laboratory course arranged to give the student a general knowledge of elementary electrical measurements and the practical application of the laws of magnetism. The course includes the study of magnetic fields and the measurement of current, electromotive force, resistance, capacity, etc. Physics 201 must be taken at the same time.

Sophomore and Junior Year—Second Term, 4 practical periods per week.

205. Heat and Light. A laboratory course including a number of experiments designed to illustrate and verify the laws and principles of heat and light. The experiments consist of the calibration of thermometers; measurement of specific heat, coefficient of expansion, heat of fusion, and vaporization; reflection with plane and spherical surfaces, refraction with prism and lenses, etc. Physics 202 must be taken at the same time.

Sophomore and Junior Year—Third Term, 4 practical periods per week.

206. Elementary Physics. The course consists of lectures, recitations and laboratory work in mechanics, sound, heat, light, electricity and magnetism. The student is required to solve a number of problems and his attention is directed to the practical applications of the principles studied. The laboratory work consists of the performance of experiments by a group of students under the direct supervision of the Instructor. The work includes only those experiments which have a direct bearing on the theoretical work and all students in the class are required to prepare original notes on the experiments performed by each group.

Text: Carhart & Chute's "Principles of Physics."

Sub-Freshman Year—4 theoretical periods and 1 practical period per week.

ENGLISH AND PUBLIC SPEAKING.

PROFESSOR RICHARDSON.

MR. BYRD.

MR. SCHULZ.

This Department, as its name implies, covers the work of two closely allied branches.

The course in English, of a necessity, lies at the base of all other courses of instruction. Clear and comprehensive knowledge of his mother tongue is absolutely necessary to the student in pursuing any line of college work. Nor is this all; for aside from the practical value of the English instruction as an aid to other branches of study, and as a preparation for business and profession, it is to his training in this Department, in connection with his study of history, the classics and modern languages, that the student must look for the acquiring of the general culture which has always been the distinguishing mark of the liberally educated man. The English work, which is common to all courses, consists of the study of the structure of the English language, English and American literature, theoretical and practical rhetoric, critical reading and analysis, and constant exercise in expression, composition and theme writing.

The work in public speaking is begun with easy lessons in elocution, and this is continued until the student has acquired a mastery of vocal expression, and a pleasing and forcible delivery. The student is then required to deliver both extempore and prepared speeches and debates, covering a wide range of subjects, in this way not only securing practice in delivery, but also developing the power of logical thought.

COURSES OFFERED.

220. Advanced Rhetoric, Composition and Public Speaking. Review of the principles of rhetoric with special reference to the

four kinds of composition. Composition consists of twelve themes based upon the work of the class.

Public speaking covers work in reading, declamation and delivery of original speeches.

Freshman Year—4 theoretical and 2 practical periods per week

221. Composition. Practice in English composition based upon a study of literature and the work of the class in course. Preparation of twelve themes on assigned subjects.

Sophomore Year—1 theoretical period and 2 practical periods per week.

222. Public Speaking. Lectures on ancient and modern orators, with readings and declamations from their orations. Ex tempore speeches. Original orations on subjects requiring care ful and intelligent research. Debates.

Sophomore Year—2 practical periods per week.

223. Advanced Composition. Advanced work in English composition. Nine themes, six of which will be connected with the student's technical work. In theme writing the different technical departments and the English Department work conjointly.

Junior Year—First and Second Term, 1 theoretical period and 2 practical periods per week; Third Term, 1 theoretical period per week.

224. Public Speaking. Writing and delivering original speeches on subjects specially adapted to the future requirements in the vocation of the student. Debates on current subjects.

Junior Year—2 practical periods per week.

225. English Literature. A study of the history of English literature and the lives of the principal writers, with selected readings from English authors, orators and poets.

Text used: Long's "English Literature," and Newcomer and Andrew's "Twelve Centuries of English Poems and Prose."

Junior Year—2 theoretical periods per week.

226. English Composition. Special themes illustrating the principles of debate, oration and short story.

Senior Year—First and Second Term, 2 practical periods per week; Third Term, 1 theoretical period per week.

227. Advanced English and Public Speaking. Required of students in the General Science Course. Subject to be selected after consultation with the head of the Department.

Senior Year—First Term, 2 theoretical periods per week; Second Term, 4 theoretical periods per week; Third Term, 3 theoretical periods per week.

228. English. Review of grammar and composition based upon work taken in course.

First Year—First and Second Term, 4 theoretical periods per week; Third Term, 3 theoretical periods per week.

229. Public Speaking. Instruction and practice in declamation and delivery of original compositions.

First Year—2 practical periods per week.

230. Farm Literature. A reading course in farm periodicals and other agricultural literature, with instruction in the taking and systematization of notes.

First Year—2 practical periods per week.

231. Rhetoric, Composition and Literature. A study of the principles of rhetoric and composition, together with a study of the history of literature and selected works of English and American authors. Composition is based upon experience and literature studied.

Sub-Freshman Year—4 theoretical and 2 practical periods per week.

ENTOMOLOGY AND ZOOLOGY.

PROFESSOR SYMONS.
PROFESSOR CORY.
MR. CHRISTIE.

Instruction is given in this Department with a view first, to giving the student the general knowledge of invertebrate and vertebrate zoology, which is necessary as a foundation science for an agricultural education; second, to fit the student in elementary and advanced entomology, both economic and systematic, so that he may pursue this specialty after graduation. A course in economic entomology and zoology is also given to provide those students who

are specializing in any of the allied agricultural sciences, with the information which is essential to their ideal development.

Students who intend to enter the medical profession or work in public health and sanitation will find in the Biological Course the work which will give them the best possible preparation for those professions.

Students wishing to take advanced work in invertebrate zoology are advised to select some subject in entomology. As the State and Experiment Station entomological work is conducted through this Department, there are special advantages for students in applied entomology.

The reference library is unusually complete, containing in addition to the standard works, a majority of the principal entomological and zoological publications. The laboratory is supplied with a large collection of insects for the use of students, and is well equipped with microscopes and other apparatus necessary for practical work in entomology and zoology.

The glass and screen insectaries of the State Horticultural Department and the Maryland Experiment Station are joined to the laboratory, and afford facilities for special investigation to a limited number of advanced students. In addition, a greenhouse 50 x 20 in the new range of houses has been set aside for entomological work.

A laboratory of the Bureau of Entomology has been established at the Experiment Station. The Parasitologist in charge is available for consultation by students specializing in parasitic Hymenoptera.

COURSES OFFERED.

240. General Zoology. This course is offered to all students taking agriculture and allied sciences, and is introductory to all other work in this Department. Laboratory work consists of a detailed study of form and function of type species. The theoretical study consists of lectures and recitations based on Hegner's College Zoology.

Text-book: Hegner's "College Zoology."

Freshman Year—First and Second Term, 2 theoretical and 4 practical periods per week.

241. Advanced Zoology. This course is required of Biological students. It consists of a study of comparative morphology and physiology, classification, distribution and laboratory technique.

Sophomore Year—2 theoretical and 4 practical periods per week.

242. General Entomology. This course consists of a study of insects, their classification, structure and relation to man. The practical work will consist of laboratory studies of the structures of typical forms, and a study in the field of the habits of insects, particularly those which are injurious to crops.

As an aid to this study, the student is required to make a collection of the more common insects which appear in the Spring.

Sophomore Year—Third Term, 2 theoretical and 4 practical periods per week.

243. Economic Zoology. The economic relations of animals to man and other animals is given careful consideration in this course which is required of Biological students.

Junior Year—First Term, 1 theoretical period and 4 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week.

244. Economic Entomology. This course will embrace a detailed study of the life histories of insects of economic importance and the most approved means of control. Practical work will be given in the preparation and application of insecticides and the operation of spraying machinery, of which the Department has a large assortment.

Junior Year—Second Term, 3 theoretical and 2 practical periods per week; Third Term, 1 theoretical period and 4 practical periods per week.

245. Entomology. This course is required of students specializing in Entomology. It consists of a study of morphology and classification of insects, their biology and inter relations.

Junior Year—Second Term, 1 theoretical period and 4 practical periods per week; Third Term, 2 theoretical and 6 practical periods per week.

246. Advanced Entomology. Senior students specializing in Entomology will be required to take this course which will consist of insect anatomy, histology, physiology, taxonomy, ecology, and

distribution. Experimental and biologic methods, collection and recording of data, entomological literature and insect delineation will be given careful attention.

Senior Year—7 theoretical and 12 practical periods per week.

247. Animal Parasites. This course is designed specially for students specializing in animal husbandry. The course involves a discussion of the life history and habits of the more important internal and external parasites of domestic animals. It also includes a study of the treatment employed in the control of these pests.

Senior Year—Second Term, 2 theoretical and 4 practical periods per week.

248. Entomological Research. Independent research on some definite problem in entomology, the results of which are usually incorporated in the graduation thesis.

Senior Year—8 practical periods per week.

249. Economic Zoology and Entomology. This course consists of lectures, recitations and laboratory and field work, designed to familiarize the student with the habits, life history, essential structure from the classification standpoint, and methods of encouraging the beneficial and controlling the injurious forms on the farm. Special emphasis will be placed on insects, amphibians, reptiles and birds.

First Year—Second and Third Term, 2 theoretical and 2 practical periods per week.

250. Sprays and Spraying. A critical study will be made of spraying apparatus, accessories and spray materials in the second term and the knowledge thus gained will be applied in actual spraying operations in the third term.

Second Year—Second Term, 1 theoretical period and two practical periods per week; Third Term, 4 practical periods per week.

HORTICULTURE.

PROFESSOR SYMONS.
PROFESSOR BECKENSTRATER.
DR. BESLEY.
ASSOCIATE PROFESSOR ANSPON.
ASSOCIATE PROFESSOR STODDARD.
MR. WHITE.

Recognizing the great importance of every phase of this subject in the State, the Department of Horticulture is offering instruction to students desiring to specialize in either pomology, vegetable culture or landscape gardening and floriculture. The courses in this subject have been revised, providing for general courses in all phases of horticulture during the Freshman and Sophomore years and permitting them to specialize in any of the above subjects in the Junior and Senior years.

The arrangement of the courses is, of necessity, subject to such adjustment as will advance the best interests of the students. The object in each course will be to give practical and theoretical training in fruit growing, truck farming and commercial landscape gardening and floriculture. Under the present arrangement the specialists in each subject will have greater opportunity to keep familiar with the progress of their work through the practical demonstration and experimental work in the State.

The students will be required to do practical work throughout the course, and in addition, they must have spent at least two summers or the equivalent, during the four years' course, in an approved commercial establishment dealing with the subject in which they are specializing. The equipment of the Department is being steadily increased and the orchards, gardens and greenhouses of College and Experiment Station afford unlimited opportunities for practical observation. In addition, the students of each course will be expected to take trips to selected commercial orchards, truck farms, greenhouses and markets.

The Department of Horticulture offers a four-year course leading to the degree of Bachelor of Science, and electives in the two-year Course in Agriculture for proficiency in which a certificate is awarded.

POMOLOGY.

COURSES OFFERED.

260. Principles of Pomology. This is an introductory course which deals with the principles of fruit growing and covers the methods of propagation, planting, cultivation and pruning.

Sophomore Year—First Term, 1 theoretical period and 4 practical periods per week; Third Term, 2 theoretical periods and 2 practical periods per week.

261. Commercial Pomology. This course considers the harvesting, packing, storing and marketing of fruits. Special stress is given to transportation and market problems.

Junior Year—First Term, 2 theoretical and 4 practical periods per week.

262. Fruit Judging. In this course the student is given practical exercises in judging fruit and selecting fruits for exhibition purposes. The standards and principles governing the judging of fruits are applied.

Junior Year—First and Second Term, 2 practical periods per week.

263. Practical Pomology. A study of the orchard sites, soils, varieties and planting plans for the orchard and garden, cultivation, cover crops, companion crops, fertilizers and pruning as practiced in commercial fruit plantations.

Junior Year—Second Term, 2 theoretical and 4 practical periods per week; Third Term, 4 practical periods per week.

264. Practical Small Fruit Culture. Practical directions for the production and handling of strawberries, grapes and bush fruits for home use and market.

Junior Year—Third Term, 2 theoretical and 2 practical periods per week.

265. Systematic Pomology. This course embraces a study of the evolution and relationship of the economical fruits. It includes exercises in describing and identifying the leading commercial varieties.

Senior Year—First Term, 2 theoretical and 4 practical periods per week; Second Term, 1 theoretical period and 4 practical periods per week.

266. Advanced Pomology. Special problems in adaptation, propagation, cultivation, pruning, harvesting and marketing as they arise in commercial orchards will be discussed. The origin and development of the various fruit sections and industries will also be considered and a study made of the men interested and the methods which they use. In this course it may be necessary at times for the student to visit orchards in other sections of the State.

Senior Year—First and Third Term, 2 theoretical and 4 practical periods per week.

267. Nut Culture and Citrus and Sub-Tropical Fruits. This course is designed to cover these fruits in a general way.

Senior Year—Second Term, 3 theoretical periods per week.

268. Plant Breeding. A general course in the science and art of plant breeding. Observed factors in organic evolution, variation and heredity are considered in so far as they have a bearing upon this subject. The discussion of the various methods of breeding and improvements are accompained by practice in the orchard, greenhouses and gardens.

Senior Year—Seond Term, 3 theoretical and 2 practical periods per week; Third Term, 4 practical periods per week.

269. Research and Thesis. This course is given to test and develop the student's power of observation and initiative. The work will be arranged with each student individually and the results will be written up in the form of a thesis. Upon approval, the student may elect other courses so far as they are available in place of a part or all of the thesis work.

Senior Year—First and Third Term, 4 practical periods per week; Second Term, 4 or 6 practical periods per week.

270. Elementary Pomology. An introductory course dealing with the principles of the subject. It is intended for all students in the two-year course and it is prerequisite to the later courses.

First Year—First Term, 2 theoretical and 4 practical periods per week.

271. Practical Fruit Growing. This course is designed for those students who desire to devote all their allotted time in horticulture to pomology. The entire field will be covered and the subjects treated in all the other courses in pomology will be in-

cluded herein so far as the allotted time and the capacity of the student will permit. Elective.

First and Third Term, 4 theoretical and 8 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week.

272. Commercial Pomology. In this course the methods of gathering, packing and marketing of the various fruits are taken up. Market problems, transportation and shipping associations receive special attention. Advantage is taken of the materials available at this time to study the classification and identification of the leading commercial varieties of apples. The student is also given practical exercises in fruit judging and the selection of fruits for exhibition purposes. Elective.

Second Year—First Term, 2 theoretical and 4 practical periods per week.

273. Practical Fruit Growing. This course is a continuation of course 270 and deals with orchard sites, soils, varieties, companion crops, fertilizers and pruning as practiced in both commercial and home orchards. Elective.

Second Year—Second Term, 1 theoretical period and 2 practical periods per week.

274. Small Fruits. In this course the production of strawberries, bush fruits and grapes is considered. The methods of propagation, selection of sites, soils, pruning, training and cultivation are discussed. Elective.

Second Year—Third Term, 2 theoretical and 4 practical periods per week.

VEGETABLE GARDENING.

COURSES OFFERED.

280. Home Vegetable Gardening. This course includes the general principles of vegetable gardening; the production of vegetables for home use; the location, planning and management of the garden. The laboratory work includes a study of vegetable seeds, germination tests, growing early plants and their care in

the greenhouses and cold frames until they are planted in the "Farmers Garden." Here the students assume full charge of the plantings and keep records of the work done on each vegetable.

Sophomore and Senior Year—Second Term, 2 theoretical and 4 practical periods per week; Third Term, 1 theoretical period and 4 practical periods per week.

281. Vegetable Forcing. A course which treats of the principles and practice of forcing vegetables in greenhouses, hotbeds and cold frames. All of the vegetables that are used for forcing are considered, and also their grading, packing and marketing. A definite area is allotted to each student who is then required to put into practice the knowledge gained in the classroom by planning, planting and managing the plot throughout the entire forcing season.

Junior Year—First and Second Term, 2 theoretical and 4 practical periods per week; Third Term, 4 practical periods per week.

282. Vegetable Gardening Literature. A course relating to the sources of literature upon vegetable growing; a study of current literature on vegetable gardening and the work with vegetables being carried on at the various experiment stations.

Junior Year—First Term, 2 practical periods per week; Second Term, 1 theoretical period per week.

283. Commercial Vegetable Gardening. A study of the principles of vegetable growing as applied in commercial production. The course includes the selection of a location, and the equipment, construction and management of hotbeds and cold frames; growing early vegetable plants; field planting; rotation of crops; and irrigation. Cultural directions are given for all the vegetables, including their requirements, varieties, tillage, enemies, grading, packing and marketing. Each student is allotted definite areas in the field and greenhouses and is required to plan, plant and manage them throughout the year. Trips are taken to markets and vegetable farms.

Senior Year—First Term, 1 theoretical period and 4 practical periods per week; Second and Third Term, 2 theoretical and 4 practical periods per week.

284. Vegetable Growing for the Canning Industry. A course dealing with the principal vegetables grown for commercial

canning; cultural directions for these crops; and the home canning of surplus products. Practical work will consist in canning small amounts of vegetables in tin cans and glass jars.

Senior Year—First Term, 1 theoretical period and 2 practical periods per week.

285. Systematic Olericulture. This course includes a systematic and descriptive study of the leading varieties of the most important vegetables, their origin and botany; adaptation of the various varieties to different cultural and market conditions; judging and exhibition work.

Senior Year—First and Third Term, 1 theoretical period and 4 practical periods per week; Second Term, 4 practical periods per week.

286. Market Gardening. This course considers essentially the same problems in commercial vegetable growing as contained in course 283 but in a briefer way. Cultural directions are given for the most important crops. The practical work includes the growing of early vegetable plants under glass and field planting of the early vegetables. The students assume full charge of the plantings.

Senior Year—Third Term, 2 theoretical and 4 practical periods per week.

287. Research and Thesis. The prime object of this work is to test the student's power of observation and initiative. Each student will be required to select some special line of research in vegetable gardening and submit the same to the head of the Department for approval not later than April 1st of the Junior year. The results must be written up in the thesis which is required for graduation.

Senior Year—First Term, 4 practical periods per week; Second Term, 4 or 6 practical periods per week; Third Term, 1 theoretical period and 4 practical periods per week.

288. Home Vegetable Gardening. The general principles of vegetable gardening as applied to the growing of vegetables for home use. The laboratory work includes a study of vegetable seeds, seed testing, seed sowing, transplanting and the care of plants in the greenhouses and cold frames. The students are re-

quired to plan, plant and manage a large home garden until the end of the term.

First Year—Second Term, 1 theoretical period and 2 practical periods per week; Third Term, 2 theoretical periods and 4 practical periods per week.

289. Commercial Vegetable Growing. A study of the principles of vegetable gardening as applied to the growing of vegetables for market and for canning. The course includes the construction and management of hotbeds and cold frames, growing early vegetable plants, soil preparation, sowing and planting, cultivation, harvesting, grading, packing, marketing, canning and storage. Each student is allotted a definite area and is required to plan, plant and manage it. Elective.

Second Year—First Term, 1 theoretical period and 2 practical periods per week; Third Term, 2 theoretical and 4 practical periods per week.

290. Vegetable Forcing. A course which deals with the principles and practice of forcing vegetables in greenhouses, hotbeds and cold frames. The most important forcing crops are considered. Each student is assigned a definite plot in the greenhouses and frames, and is required to plan, plant and manage it. Elective.

Second Year—First and Second Term, 1 theoretical period and 2 practical periods per week.

291. Advanced Vegetable Gardening. Second year students who elect to spend the entire time scheduled for horticulture in vegetable gardening, will be given a course which includes the subjects considered under courses 289 and 290, but the problems arising in the different phases of commercial vegetable growing will be treated in a more thorough manner. It also includes a systematic study of some of the most important commercial varieties. Trips will be taken to markets and vegetable farms. Elective.

Second Year—First and Third Term, 4 theoretical and 8 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week.

LANDSCAPE GARDENING AND FLORICULTURE.

COURSES OFFERED.

300. Principles of Landscape Gardening. This course has been arranged for the purpose of giving the student a broad knowledge of the various types of landscape gardening and the principles which underlie them. Lectures and field trips.

Sophomore Year—Second Term, 1 theoretical period and 2 practical periods per week.

301. Ornamentation of Home Grounds. A continuation of course 300, giving special attention to the improvement of home grounds. Field trips and reports.

Sophomore Year—Third Term, 4 practical periods per week.

302. History of Landscape Gardening. A reference course dealing with the literature and the different stages in the development of the art. Collateral reading and reports.

Junior Year—First Term, 2 practical periods per week.

303. Floriculture. Preparation of soils, potting, watering, ventilating and fumigating as applied to greenhouse crops. Lectures, practical work in greenhouses, field trips and reports.

Junior Year—First Term, 2 theoretical and 4 practical periods per week.

304. Commercial Floriculture. Greenhouse plants and flowers; culture; and methods of handling and marketing for wholesale and retail markets. Lectures, practical work, trips to leading growers in this section, and reports.

Junior Year—Second Term, 3 theoretical and 4 practical periods per week.

305. Commercial Floriculture. Continuation of course 304.

Junior Year—Third Term, 2 theoretical and 6 practical periods per week.

306. Greenhouse Construction. Types of forcing structures, their location, arrangement and construction; cost; methods of heating and ventilating. Lectures, drawing plans, specifications, and practical work in construction.

Senior Year—First Term, 2 theoretical and 4 practical periods per week.

307. Landscape Design. This course deals with the composition of gardens, private estates and related problems. Simple problems involving the use of topographic surveys, drainage and grading plans. Lectures, drafting and collateral reading.

Senior Year—First Term, 2 theoretical and 4 practical periods per week.

308. Civic Art. A study of the principles of city planning and their application to city, town and rural improvement. Lectures and collateral reading.

Senior Year—First Term, 2 theoretical periods per week.

309. Landscape Design. Continuation of course 307. More complex problems are studied, including public parks and playgrounds. Planting plans and designs.

Senior Year—Second Term, 2 theoretical and 4 practical periods per week.

310. Landscape Practice. Grading plans and construction drawings, estimates, specifications and contracts.

Senior Year—Second Term, 4 practical periods per week; Third Term, 1 theoretical period and 4 practical periods per week.

311. Plant Materials. Trees, shrubs and herbaceous plants. Their characters, soil requirements, arrangement and planting.

Senior Year—Second Term, 2 theoretical and 2 practical periods per week.

312. Floral Decoration. Plants and cut flowers. Their arrangement in baskets, designs, bouquets, table and house decorations.

Senior Year—Second Term, 1 theoretical period and 4 practical periods per week.

313. Garden Flowers. Annuals, bulbous plants and herbaceous perennials grown in the home garden for cut flowers and ornamental planting.

Senior Year—Third Term, 2 theoretical and 4 practical periods per week.

314. Tree Repair. Methods of treating trees and shrubs to control attacks of insect and fungus enemies and to repair injury due to them. Technical details in pruning, bracing, treatment of wounds, and cavity filling.

Senior Year—Third Term, 1 theoretical period and 4 practical periods per week.

315. Amateur Floriculture. Plants and flowers for the window and home garden, soils, fertilizers, containers, potting and shifting of plants.

Senior Year—Third Term, 2 theoretical and 4 practical periods per week.

316. Plant Propagation. This course takes up seedage, layering, cuttings, buds and grafts. Special attention is given to ornamental plants for home decoration.

First Year—Second Term, 2 theoretical and 4 practical periods per week.

317. Floriculture. This course takes up the various phases of greenhouse management, and includes preparation of soils, potting, watering, and ventilating. Elective.

Second Year—First Term, 2 theoretical and 4 practical periods per week.

318. Principles of Landscape Gardening. A study of the various styles of landscape gardening and the principles which underlie them. Their application to the ornamentation of home grounds is also considered. Elective.

Second Year—First Term, 2 theoretical and 4 practical periods per week.

319. Commercial Crops. Methods of growing and marketing plants and cut flowers for wholesale and retail markets. Elective.

Second Year—Second Term, 1 theoretical period and 2 practical periods per week.

320. Ornamentation of Home Grounds. This course takes up the principles of landscape gardening and their application to the home grounds. Elective.

Second Year—Second Term, 1 theoretical period and 2 practical periods per week.

321. Commercial Crops. Continuation of course 319. Elective.

Second Year—Third Term, 2 theoretical and 4 practical periods per week.

322. Garden Flowers. Annuals, bulbous plants and herbaceous perennials suitable to planting in the home garden for cut flowers and ornamentation. Elective.

Second Year—Third Term, 2 theoretical and 4 practical periods per week.

FORESTRY.

The instruction in forestry is planned to give to the student, who is fitting himself to take up the practical problems of farm management, a sufficient knowledge of the principles of forestry to enable him to apply to the wood lot or timber tract, which is a part of practically every farm, the same degree of intelligent direction which he is prepared to give to the tilled lands and thus obtain equally satisfactory results.

COURSE OFFERED.

320. Farm Forestry. This course includes forest botany, wood-management, measurement, valuation and utilization of forest crops, fire protection, nursery practice and tree planting. Lectures and field work.

Senior and Second Year—Third Term, 2 theoretical and 4 practical periods per week.

LANGUAGES.

PROFESSOR SPENCE.
MR. SCHULZ.

The Department of Languages embraces the study of three branches: Latin, German and French. All students are required to take the courses in German or French. Students may elect to take Latin in the Freshman year in place of history, provided that they have completed the work outlined for the Sub-Freshman Class or its equivalent.

The course of study in Latin is given with two ends in view—first, to train the mind into accurate and close methods of reasoning; second, to give the student a more thorough and comprehen-

sive knowledge of his own language than he could otherwise acquire. Special attention is paid to Latin forms and terminations and to the derivation of English words from Latin roots.

So large a proportion of modern scientific literature is in German and French that a reading knowledge of these languages has become almost essential to the student pursuing advanced courses in the various spheres of scientific research. Instruction in these branches is given, therefore, to enable the student to translate intelligently the works of French and German masters in the domain of science, for, frequently there are no English versions of their works. As the student becomes more familiar with foreign scientific terms and construction, he is required to translate treatises bearing upon the special line of work which he may be pursuing.

LATIN.

COURSES OFFERED.

340. SYNTAX AND TRANSLATION. Reading of Caesar and Sallust with prose composition selected from the text read.

Text-books: Smith's "Latin Lessons," Harper and Tolman's "Commentaries of Caesar," and Scudder's "Sallust."

Freshman Year—3 theoretical periods per week.

341. MYTHOLOGY, TRANSLATION AND LITERATURE. Reading of Virgil and Horace with lectures on mythology and Latin literature. Elective.

Text-books: To be selected later.

Sophomore Year—First and Second Term, 5 theoretical periods per week; Third Term, 4 theoretical periods per week.

342. ELEMENTARY LATIN. Elective.

Sub-Freshman Year—3 theoretical periods per week.

GERMAN.

COURSES OFFERED.

360. GRAMMAR AND CONVERSATION.

Text-book: Bacon's "German Grammar."

Freshman Year—3 theoretical periods per week.

361. TRANSLATION.

Text-books selected from the following: Hauff's "Das Kalte Herz," Schiller's "Der Neffe als Onkel," Wildenbruch's "Das Edle Blut" and "Der Letzte," Hillern's "Hoher als die Kirche," Grandgent's "Ali Baba and the Forty Thieves," Sybel's "Die Erhebung Europas," Walther's "Algemeine Meereskunde," Brant and Day's "Scientific German," Wallentin's "Grundzuge der Naturlehre," Moser's "Der Bibliothekar."

Sophomore Year—3 theoretical periods per week.

362. TRANSLATION. Selected readings from various literary and scientific texts and periodicals.

Junior Year—3 theoretical periods per week.

Senior Year—3 theoretical periods per week.

363. GRAMMAR AND CONVERSATION.

Text-book: To be selected.

Sub-Freshman Year—4 theoretical periods and 1 practical period per week.

FRENCH.

COURSES OFFERED.

380. GRAMMAR AND COMPOSITION.

Text-book: Chardenal's "Complete French Course" (Revised), Aldrich & Foster's "Elementary French" and "French Reader," Super's "French Reader," and selected texts.

Freshman Year—3 theoretical periods per week.

381. TRANSLATION. Selections from standard authors.

Sophomore Year—3 theoretical periods per week.

382. TRANSLATION. Advanced text selected. Readings from various scientific texts and periodicals.

Junior Year—3 theoretical periods per week.

Senior Year—3 theoretical periods per week.

383. GRAMMAR AND COMPOSITION.

Text-book: To be selected.

Sub-Freshman Year—4 theoretical periods and 1 practical period per week.

MATHEMATICS.

PROFESSOR HARRISON.

MR. SPRINGER.

Mathematics is the basis upon which scientific information rests. A knowledge of the study is necessary, as much from the utilitarian point of view as from the mental training its acquisition gives. Its importance as a factor in our College course takes its rise from the former consideration. All instruction in this work is with a view to the equipping of students for the more practical work soon to follow.

The class work in mathematics in the several courses consists of arithmetic, accounting, algebra, geometry (plane and solid), trigonometry, analytic geometry, differential and integral calculus, and their application to mechanics, engineering, physics and surveying.

COURSES OFFERED.

400. TRIGONOMETRY. Deduction of formulas and practical applications of same in the solution of right and oblique triangles, etc.

Text-book: Wentworth.

Freshman Year—First Term, 5 theoretical periods per week; Second Term, 2 theoretical periods per week.

401. ADVANCED ALGEBRA. Elementary theory of equations, partial fractions, etc.

Text-book: Taylor.

Freshman Year—Second Term, 3 theoretical periods per week.

402. ANALYTICAL GEOMETRY. Geometry of two and three dimensions, loci of general equations of second order, higher plane curves, etc.

Text-book: Riggs.

Freshman Year—Third Term, 5 theoretical periods per week.

Sophomore Year—First Term, 5 theoretical periods per week.

403. CALCULUS. A discussion of the methods used in differentiation and integration, and the application of these methods in determing maxima and minima, areas, volumes, moments of inertia, etc.

Text-book: Bowser.

Sophomore Year—Second Term, 5 theoretical periods per week; Third Term, 4 theoretical periods per week.

Junior Year—First Term, 5 theoretical periods per week.

404. Farm Accounts. Brief course.

First Year—First Term, 2 theoretical periods per week.

405. Algebra. A thorough course in elementary algebra.

Text-book: Wentworth—Smith.

Sub-Freshman Year—4 theoretical periods per week.

406. Plane Geometry. Books one to five, inclusive.

Text-book: Wentworth.

Sub-Freshman Year—First and Second Term, 4 theoretical periods per week.

407. Solid Geometry. Books six to eight, inclusive, with selected practical problems. Elective .

Text-book: Wentworth—Smith.

Sub-Freshman Year—Third Term, 4 theoretical periods per week.

408. Farm Arithmetic. Theory and practice. Elective.

Sub-Freshman Year—Third Term, 4 theoretical periods per week.

MECHANICAL ENGINEERING.

PROFESSOR GWINNER.
ASSOCIATE PROFESSOR CRISP.
MR. WARTHEN.

This Department offers a Course in Mechanical Engineering leading to the degree of Bachelor of Science in Mechanical Engineering. The list of all subjects required to be completed to obtain this degree is given on page 109. It prepares young men to design and construct machinery, to superintend engineering establishments, to become superintendents of construction and to teach mechanical engineering and manual training. For degree of Mechanical Engineer see page 123.

The record of its graduates shows that the course is equipping such for immediate usefulness in the technical field.

Instruction is given by means of lectures and recitations, accompanied by a large amount of practice in the drafting rooms, shops and experimental laboratory.

The program of the Department is arranged to embody the two-fold belief that a thorough training is best secured by a study of the practical application of the principles involved, as well as of the principles.

EQUIPMENT. The Mechanical Engineering Laboratories are situated in the engineering building, which contains the wood-working and machine shops, drafting and lecture rooms, foundry and blacksmith shops as well as the College power plant.

The wood-working shop contains accommodations for bench work and wood turning. The power machinery in this shop is a band and universal circular saw, five 12-inch turning lathes, one 16-inch by 10-foot pattern maker's lathe, a grindstone, wood trimmer, 26-inch wood planer and universal tool grinder.

In the forge shops are sixteen power forges, two hand forges and a pressure fan and exhauster for keeping the shop free of smoke. There is a full assortment of smith's tools for each forge.

The foundry is equipped with an iron cupola, which melts 1,200 pounds of iron per hour, a brass furnace, one core-oven and the necessary flasks and tools.

The machine shop equipment consists of one 10-inch speed lathe, one 22-inch engine-lathe with compound rest, one 12-inch combined foot and power lathe, two 14-inch engine-lathes, one 24-inch drill press, one No. 4 emery tool grinder, one No. 1½ universal milling machine, and an assortment of vises, taps, dies, pipe-tools and measuring instruments.

The machinery of the pattern and machine shops is driven by a 9 by 14-inch automatic cut off, high speed engine, built by members of the Junior and Senior Mechanical Engineering Classes, after the standard design of the Atlas engine. An 8 by 12-inch engine drives the machinery of the blacksmith shop and foundry. It was presented to the College by the City of Baltimore, and secured through the efforts of Rear-Admiral John D. Ford, United States Navy, retired.

The experimental laboratory contains: A hundred thousand pound Riehle combined hand and power testing machine for making tensile, compression, shearing and transverse tests on various kinds of materials, turbo-generator set, consisting of a Curtis steam turbine and thirty-five K. W. General Electric compound wound generator for making steam and electric efficiency tests. This set is connected with the general lighting system of the College so that any time it may be tested to its capacity. It may also be used for lighting purposes if necessary. A cross compound condensing Corliss engine of fifty horse-power, equipped with brake, indicators, relief valves, reducing motion, steam and vacuum gauges, and speed indicator, gives ample opportunity for steam consumption and brake tests. This is connected with the shops, so that any time it may be switched on and drive them. The College power plant with its vacuum heating system, three one-hundred horse-power return tubular boilers, and two electric generating units offer unexcelled opportunities for experimental work. A six horse-power, four-cycle gasoline engine equipped with prony brake permits of making tests in gas engineering.

The three drafting rooms are well equipped for practical work. Two of these are used by the Junior and Senior Classes, each student being provided with a separate desk. The third room is used jointly by the Freshman and Sophomore students and contains fifteen drawing tables, accommodating about ninety students.

Engineering students are to provide themselves with approved drawing outfit, materials and book; the cost of which during the Freshman Year amounts to about $15.00. The cost to other students taking mechanical drawing is about $5.00. The College does not furnish these, but they are purchased by the student and are his property.

The combined blue print and dark room with its commodious printing frames affords splendid opportunities for sun printing, which is so useful to engineering students.

Tours of Inspection. The proximity of the College to Baltimore, Washington and Philadelphia, with their great industrial enterprises, offers unexcelled opportunities to engineering students to acquaint themselves practically with what is being done in mod-

ern engineering construction. Upon trips of inspection an instructor accompanies the class and explains the different processes, plants and machines.

COURSES OFFERED.

420. Freehand Drawing. Elementary practice; lettering; exercises in sketching, both in pencil outline and pencil rendering; line drawing, composition, proportion, and comparative measurements; exercises in sketching of technical objects; and pen and ink shading. Plates upon completion are bound and properly titled.

Freshman Year—First Term, 4 practical periods per week.

421. Mechanical Drawing. Practice in plain lettering, use of instruments, projection and simple working drawings, the plates upon completion being enclosed in covers properly titled by the students. Instruction is given in this subject during the Junior year to students in the Agricultural and Horticultural Courses and is modified to meet their needs.

Text-book: Tracy's "Mechanical Drawing."

Freshman Year—4 practical periods per week.

Junior Year—First Term, 4 practical periods per week.

422. Technical Instruction. Explanation of the reading of mechanical drawings; the proper cutting angles, care and adjustment of carpenter tools; relative strength of wood joints; wood, its shrinking and warping, and how to correct and prevent. Drill in problems in arithmetic, algebra and drawing by notes and lectures.

Text-book: Goss' "Bench Work in Wood."

Freshman Year—First Term, 2 theoretical periods per week.

423. Wood Work. During the First Term is taught the use and care of bench tools, exercise in sawing, mortising, tenoning and laying out work from blue prints. The Second Term is devoted to projects involving construction, decoration and wood turning. During the Third Term the principles and process of pattern making are taught, together with enough foundry work to demonstrate the uses of pattern making. Instruction in this course is given to the agricultural and horticultural students in the Junior year and covers types of wood work used on the farm.

Freshman Year—First Term, 6 practical periods per week; Second and Third Term, 4 practical periods per week.

Junior Year—Second Term, 4 practical periods per week.

424. Descriptive Geometry. Detailing of machinery and drawing to scale from blue prints. Tracing and blue printing, and representation of flat and round surfaces by ink shading. Its relation to mechanical drawing and the solution of such problems relating to magnitudes in space as bear directly upon those which present themselves to civil, electrical and mechanical engineers.

Text-book: Anthony and Ashley's "Descriptive Geometry," and Notes on Empirical Design.

Sophomore Year—First Term, 4 practical periods per week; Second Term, 3 theoretical and 4 practical periods per week; Third Term, 2 theoretical and 2 practical periods per week.

425. Blacksmithing. The making of the fire and how to keep it in order. The operations of drawing-out, upsetting and bending of iron and steel, including the calculations of stock for bent shapes. Welding. Construction of steel tools for use in the machine shop, including tool dressing and tempering. Annealing.

Sophomore and Junior Year—First and Second Term, 4 practical periods per week.

426. Technical Mechanics. Elementary principles of applied mechanics, calculations of gear and pulley trains, bent levers, calculation of belt lengths, lacing belts, the suction pump, and bolts and screws.

Text-book: Jamieson's "Mechanics."

Sophomore Year—Second Term, 2 theoretical periods per week.

427. Foundry Work. Moulding in iron and brass. Core making. The cupola and its management. Lectures on the selection of irons by fracture, fuels, melting and mixing of metals.

Sophomore Year—Third Term, 8 practical periods per week.

428. Steam Engines, Boilers and Dynamos. The principles of steam and the steam engine. The slide valve and valve diagrams. The indicator and its diagram. Steam boilers, the various types and their advantages. Each student taking this course is required to spend certain hours in the power plant actually operating the engines, boilers and dynamos. The theory of dynamos is given in courses 184 and 185.

Text-book: Allen and Bursley's "Heat Engines."

Sophomore Year—Third Term, 3 theoretical periods per week.

429. Elementary Machine Design. Freehand sketching of the details of machinery and making working drawings of same. Calculations and drawings of a simple type punching press.

Text-book: Hoffman's "Machine Design." Empirical designing.

Junior Year—First Term, 1 theoretical period and 4 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week; Third Term, 3 theoretical and 8 practical periods per week.

430. Machine Work. Elementary principles of vise and machine work, which includes turning, planing, drilling, screw cutting and filing. This is preceded by study of the different machines used in the machine shops.

Junior Year—First and Second Term, 4 practical periods per week; Third Term, 12 practical periods per week.

Senior Year—4 practical periods per week.

431. Graphic Statics. The theory and practice of the method of determining stresses in cranes, roof trusses and bridges, and stress on beams and girders due to traveling loads. Analysis of the stresses in roof trusses by the force polygon. Application of the equilibrium polygon to beams and girders. Analysis of stresses in bridge trusses.

Text-book: Merriman and Jacoby's "Graphic Statics."

Junior Year—Second Term, 4 theoretical periods per week.

432. Experimental Engineering. Determining the amount of moisture in steam; the efficiency of the injector; the transit and its uses; indicator practice and the use of the planimeter; slide valve setting; the slide rule and micrometer; the analysis of boiler feed water; flue gases; lubricating oils; and the determination of the heating value of coals. The efficiency test of a Curtis steam turbine combined with that of an electric generator. The brake test and steam consumption of a cross compound condensing Corliss engine under varying loading. The testing of iron, steel and wood to determine their commercial values. The testing of cement to determine its tensile and compressive strength. The determination of the horse-power, efficiency and gas consumption of a six H. P. gasoline engine. Barrel and throttling calorimeter tests. Determining effi-

ciency of a screw jack. Injector testing. All such tests must be written upon standard forms provided for each student.

Junior Year—Third Term, 4 practical periods per week.

Senior Year—First Term, 4 practical periods per week; Second and Third Term, 8 practical periods per week.

433. Structural Design. Analysis of stresses in structural steel buildings, traveling cranes and derricks. Design of crane girders, lattice girders and roof trusses. In addition mechanical engineering students have design of cranes and civil engineering students have design of truss bridges and retaining walls. Both analytical and graphical methods are used, that being used which is best suited to problem. Design of riveted connections. Design of plate girders under dead and live loads.

Text-books: "Cambria Steel," Ketchum's "Steel Mill Buildings," Merriman's "Bridge Design," and Thompson's "Bridge and Structural Design."

Senior Year—First and Second Term, 2 theoretical and 4 practical periods per week; Third Term, 2 theoretical and 6 practical periods per week.

434. Mechanics of Engineering. The mechanics of solids, Statics of a material point and of rigid bodies. Chains and cords. Centrifugal and centripetal forces. Work. Power. Energy. Sliding friction, friction of journals, friction of pivots, friction of ropes and belts. Analysis of stresses in thick cylinders.

Text-book: Church's "Mechanics of Engineering."

Senior Year—First and Second Term, 4 theoretical periods per week; Third Term, 3 theoretical periods per week.

435. Kinematics of Machinery. Centrodes. Determination of the instantaneous axis and instantaneous center. Preparation of displacement, velocity and acceleration diagrams. Design of cams. Slow advance and quick return motion for machine tools. Form of tooth outlines in the epicycloidal and involute systems.

Text-book: Barr and Wood's "Kinematics of Machinery."

Senior Year—First Term, 1 theoretical period and 4 practical periods per week.

436. Thermodynamics. Laws of fundamental equations; perfect gases; compound, hot-air and gasoline engines; theory of

vapors; relation between pressure, volume, temperature, work and heat for special changes of state; calculation and drawing of Carnot's cycle and temperature entropy diagram. The steam turbine. Compressed air and refrigeration machinery.

Text-book: Mark and Davis' "Steam Tables," Gwinner's "Notes on Gas, Oil and Hot-air Engines," and Moyer and Calderwood's "Engineering Thermodynamics."

Senior Year—First and Third Term, 3 theoretical periods per week; Second Term, 4 theoretical periods per week.

437. Farm Machinery. A detailed study of the farm implements. One of the objects of the course is to familiarize the students with the latest improvements in farm machinery. Given by lectures and practical work.

Senior Year—First Term, 2 theoretical and 4 practical periods per week.

438. Hydromechanics. A continuation of course 130. Pumps and pumping machinery. Water supply engineering. Practical consideration of friction of water in pipes. Cost data of machinery. Notes and lectures.

Senior Year—Second Term, 4 theoretical periods per week.

439. Design of Farm Structures. The design and arrangement of farm buildings and equipment. Lectures also cover the heating, lighting, ventilation, plumbing and costs. Elective.

Senior Year—Second and Third Term, 2 theoretical and 4 practical periods per week.

440. Design of Farm Machinery. The design and drafting of those portions of farm machinery common to engines, harvesting, pumping and fertilizing machinery such as levers, shafts, gears and frames. Elective.

Senior Year—Second and Third Term, 2 theoretical and 4 practical periods per week.

441. Farm Buildings. Design and specifications of a simple typical building in timber or concrete and lectures upon the details. The course is very practical and latitude is permitted the student to develop his ideas.

Senior Year—Third Term, 1 theoretical and 4 practical periods per week.

442. Heating and Ventilation. The principles of ventilating; amount of heat required for warming; radiating surfaces; steam, hot water and hot air systems; vacuum and vapor systems; pipe and pipe systems, appliances; specifications and contracts.

Text-book: Hoffman's "Heating and Ventilation."

Senior Year—Third Term, 2 theoretical and 4 practical periods per week.

443. School Architecture. The planning and detailing of moderate priced and medium sized school buildings; including the heating, ventilation, lighting and plumbing.

Senior Year—Third Term, 3 theoretical and 4 practical periods per week.

444. Advanced Pattern Making. Practical examples in loose-piece and three-part-flask patterns and in engine patterns.

Senior Year—Third Term, 8 practical periods per week.

445. Farm Drawing. Geometrical construction, plan and elevation with details of farm gate and plan and elevation of simple farm structures.

First Year—First Term, 4 practical periods per week.

446. Farm Wood Work. Use of tools in constructing trestles, gates and frames.

First Year—Second Term, 4 practical periods per week.

447. Farm Machinery. A detailed study of the farm implements and their care. Detail of costs of some of the prominent types. Lectures and practical work.

First Year—Second Term, 2 theoretical and 4 practical periods per week.

448. Farm Buildings. Study of general types of such structures. Calculating bill of material from sketches and making estimate of cost.

Second year—First Term, 4 practical periods per week.

MILITARY SCIENCE.

FIRST LIEUTENANT GEORGE T. EVERETT.

The Congress of the United States, subject to certain conditions, appropriates annually a generous sum for each Agricultural College of the United States.

One of the conditions imposed by this grant is that the students shall receive a course of training in Military Tactics. The Government depends partly upon such institutions for the great number of officers that would be needed in time of war to command the Volunteers.

From the view-point of the student, military training develops patriotism, willingness to assume responsibility, knowledge of human nature, and physical and moral courage. It involves the cultivation of thought and action, the subjection of one's self to the restraints of an orderly, systematic life, and to a direct and unselfish honesty. It involves the punctilious practice of dignified deportment, pride in personal appearance, and looking at life from a simple, straightforward standpoint. It develops a youth physically in a uniform, systematic manner, improves his health, and gives him that erect carriage and elastic stride, uplifted chin and the steady unfaltering eye that have come to be recognized the world over as indicating the man of military training.

The object of military training is to teach the student to secure intelligent concentration of effort. The success of any man depends largely upon his ability to enforce his will upon those under him and to cause them to execute his plans with promptness and precision. In everything involving united effort, men must be trained to orderly and concerted action before efficiency may be expected. "System" is merely discipline under another name.

INSPECTION.

The War Department designates an officer of the General Staff of the Regular Army to make an annual inspection of the Military Department of each of the institutions of learning in the United States at which an officer is regularly detailed. There are about one hundred such institutions. This inspector rates these schools according to their status and military efficiency.

ORGANIZATION.

The Corps of Cadets is organized as a battalion of three companies, staff and band, the drill and administration of which conform as far as possible to that of the Regular Army.

INSTRUCTION.

Instruction in the Military Department is a graduated course, starting with the drill that is given the recruit in the United States Army and working up by steps until in his senior year the student receives the instruction given in the United States Army to Non-commissioned Officers and Lieutenants.

There are three hours of practical drill and one period of theoretical instruction each week. All students are required to attend both the drill and instruction unless physically unfit or specially excused by the President of the College. The men excused for any reason may be required to spend the equivalent time in learning the system of accounts, records, etc., which are used in the United States Army, thus fitting themselves for the clerical work so necessary to the Staff Corps.

The practical drill consists of recruit drill, close order, extended order, bayonet exercise, calisthenics, tent pitching, advance guard, rear guard, outposts, infantry attack, withdrawal from position, and the ceremonies of parade, guard mounting, reviews and escort to the Colors. Rifle practice is also taught during this course as far as present facilities will allow.

The theoretical instruction consists of lectures, informal talks and practical demonstration in the following subjects: close order, extended order, fire attack, security and information, marching, patrolling, signalling, guard duty, personal hygiene and first aid, target practice, camp expedients, entrenchments, map reading and sketching, tactical walks, war games, map problems, bridge building, military law, military courtesy and military history and policy of the United States.

With a proper degree of application, every graduate should be able to pass an examination for a Volunteer Commission or to enter the United States Army as a Second Lieutenant.

EQUIPMENT.

The battalion of cadets is equipped with the United States magazine rifle, caliber 30, known as the Krag-Jorgensen, with complete equipment of side arms, cartridge box, etc. The cadet officers and

non-commissioned staff officers are equipped with the regulation West Point cadet sword and sash.

The Government also has supplied the battalion with the new regulation sub-calibre target rifle for gallery practice, and has been very liberal in the allowance of ammunition for gallery practice, of blank cartridges for field exercises, and of ball cartridges for outdoor range practice.

Students are held strictly accountable for all arms and equipment issued to them.

PROMOTIONS.

The officers and non-commissioned officers of the corps are selected with reference primarily to their fitness for the duties they will be required to perform. Their general deportment and proficiency in academic work are also given weight in making such selection.

Commissioned officers are, as a rule, selected from the Senior Class, sergeants from the Junior Class, and corporals from the Sophomore Class.

Cadet officers are required to serve from the beginning of the scholastic year up to March 1, of that year. On this date readjustment of rank is made, based upon the following: Military Efficiency, as evidenced by the fall drills and winter recitations in the Tactical Department; Military Discipline and Soldierly Bearing; General Deportment.

UNIFORM.

The uniform worn by all members of the battalion of cadets is the regulation West Point fatigue uniform, and is made of the best Charlottesville gray cloth. The uniform consists of the gray fatigue blouse, trousers and cap for all military formations. By special contract with one of the largest Military Equipment houses in the United States, the uniform is furnished at a very low price. Measures for this uniform are taken as soon as the student arrives at College, and fit is guaranteed. For summer use there must also be provided two gray shirts, a pair of leggins, a waist belt, and a black tie.

White gloves, collars, caps and other military accessories may be purchased at the stores near the College, or from the contractor who furnishes the uniforms.

Information concerning the cost of uniforms, etc., may be found on page 130.

PHYSICAL CULTURE.

DIRECTOR BYRD.

Owing to the unusual conditions of the last four years, which have compelled absolute concentration of the College work, the required classes in the gymnasium have been temporarily discontinued. Recent appropriations by the Legislature for building construction will alleviate this condition and it will be only a short while now before the regular routine can be resumed. In the meantime everything possible has been and is being done to interest the students of all classes in outdoor sports. The College has expended considerable sums of money for equipment to enable large numbers of the students to take part in the several branches of outdoor athletics. This development is supplemented by class instruction in hygiene and the care of the person in relation to the physical and mental welfare. A complete course in corrective and general physical culture, to be supplemented by lectures in personal hygiene, is now being mapped out for use in the future. A system of exact measurements is to be used which will show the progress of the various students during each year. The course will be compulsory. For outline of course now given see page 112.

SUB-COLLEGIATE INSTRUCTION.

PROFESSOR HARRISON.
PROFESSOR RICHARDSON.

This Department was established in 1892, and reorganized in 1915; and is designed to meet the requirements of those students

who have not had the advantage of a thorough high school training, with a view to equipping them to enter the regular collegiate department.

Only such students are desired as will be able to enter the Freshman Class within a year, and who are fifteen years of age. This course is recommended specially to students who have not been to school for several years; for their progress in the regular collegiate course, by virtue of such a drawback, would be seriously impeded. It is to be remarked that as a rule the students who have taken this course make excellent progress in their later college work. Students in this Department are subject to the same military regulations as other students.

This Department will be eliminated July 1, 1918.

For outline of courses see page 112.

VETERINARY SCIENCE.

PROFESSOR BUCKLEY.

This Department offers instruction in the elements of veterinary science. The course embraces the study of the external form as well as the internal structure and functions of the domesticated animals. It is intended to supplement animal husbandry instruction, and does not have for its object the training of students for veterinary practice. The preservation of health in animals is more aimed at than their restoration from disease. When studiously pursued the courses offered are of great value to the breeder, feeder or manager of live stock.

COURSES OFFERED.

The accompanying brief descriptions indicate the scope of the different courses.

480. Anatomy and Physiology. This course embraces a general consideration of the structure and functions of the animal body, with especial reference to animal production and dairying.

Senior Year—Second Term, 3 theoretical periods per week.

481. Animal Diseases. A study is made of the diseases of the domesticated animals with emphasis upon sanitation, practical bac-

teriology, nursing, administration of medicine and use of common medicinal substances. The aim of this course is to enable the student to perceive the early appearance of diseases and care for them intelligently under proper veterinary supervision.

Senior Year—Third Term, 3 theoretical and 4 practical periods per week.

482. Animal Diseases. A briefer course in animal diseases is offered to the students in the two-year Agricultural Course.

Second Year—Second Term, 3 theoretical and 2 practical periods per week.

THE COLLEGE LIBRARY.

DR. SILVESTER.
MISS CONNER.

The College Library may be properly regarded as one of the departments of the institution, as its aid for purposes of reference and its influence upon the mental development of the students must always be felt throughout all courses. The present quarters of the Library, while adequate for its immediate needs, will necessarily be too limited in the course of time. The reading room is well arranged and lighted, and is in all respects comfortable and convenient.

While the Library is not large, the collection of works has been carefully chosen, and the shelves contain a fair supply of works of reference, history, biography, essays, poetry and the standard works of fiction. Several thousand volumes of bound United States Government Reports comprise an important addition to the reference works of the Library. Most of the leading magazines and a number of newspapers are subscribed for; technical periodicals and works of reference relating to specific branches are deposited in the libraries of the various departments.

The works in the Library are classified according to the modern Dewey Decimal System of classification. As rapidly as possible the sets of Government Reports that are most valuable are being completed and catalogued. At present there are on hand completed to date, or nearing completion, sets of the reports and bulletins of

the United States Agricultural Department, the Geological Survey, the Fish Commission, the Smithsonian Institution, the National Museum, the Bureau of Ethnology, the Bureau of Education, the Labor Bureau, the Census Bureau and the Bureau of American Republics. There are also nearly completed sets of the Consular Reports, Special Consular Reports, the Engineers' Reports of the United States Army, the War of the Rebellion Records and Messages and Documents, besides many other miscellaneous publications of great value. Many valuable State publications are also on file.

It is the aim of the Librarian to render all these valuable works available for easy reference by the students.

Grateful acknowledgment is made to the officers of all the departments and bureaus above noted for their publications, and especially to the United States Superintendent of Documents, through whose aid many public documents have been received. Thanks are likewise due the following for valuable additions to the Library: Johns Hopkins University, the Geological Survey, the Weather Service, the Highway Commission, and the Bureau of Statistics and Information. Special thanks are due the county press for their liberality in sending their publications free to the Library.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

MR. DARROW.

Aims.

Service, first, last and all the time is the aim of the Y. M. C. A. It attempts nothing through selfish motives, but through the desire to turn into right channels a boy's surplus energy.

Nature.

The Maryland State College Association is affiliated with the International Y. M. C. A. and membership in the local branch carries with it a welcome to all city and student associations, and during vacation periods, entitles the holder to many of the privileges of the city Y. M. C. A.

Officers.

For the first time a salaried secretary is in charge of the Y. M. C. A. organization. He works through and with a student cabinet, having a President, Vice-President, Recorder, Treasurer, and chairmen of the following committees: Employment, Membership, Social Affairs, Music, Publications and Bible Study.

The Employment Committee assists students in finding the kind of work they want, acting as a clearing house for employer and employee.

The Membership Chairman's duties are as the title indicates. The Social Chairman plans receptions, banquets, and social affairs affording a pleasant evening's entertainment to all. The Music Chairman obtains special music for Sunday and other meetings, and the Publications Chairman keeps the public informed.

Regular Meetings.

The Bible Study Chairman organizes bible and special problem study classes, and endeavors to interest the student in unselfish ideals.

Special speakers on both popular and religious subjects, are provided for Sunday 3:30 meetings. The proximity to Washington makes it possible to obtain the best of talent, Representatives, Government officials, worth-while business men, and Ministers of power, thus making the meetings of great value.

Location.

The Y. M. C. A. is located in Calvert Hall. It has beautiful quarters; a game room, furnished with all kinds of games, a pool room, a reading and writing room, and an office for the Secretary. A good readable line of books having a sane, helpful, moral tone make the reading room attractive.

New Students.

Receptions are given to get the new men acquainted with the student body and with the members of the faculty, so as to make them feel "at home."

New students are given special attention, warned of dangers and guided to harmless but interesting methods of "letting off steam" without scorching their moral fibre.

A handbook is published, giving the student detailed information about the College, its societies and activities. Upon request it will be mailed to you free of charge.

The Association welcomes at all times suggestions for its betterment and extension of its service.

COURSES OF STUDY.

In order to systematize the work of the different departments of the College, and as far as possible arrange for specialization within limits consistent with the normal development of individual students, several distinct courses of study have been prepared, one of which the student is expected to choose upon entering the regular College work.

These courses are Agricultural Education, Agronomy, Animal Husbandry, Horticulture, Biology, Chemistry, Canning, General Science, Civil Engineering, Electrical Engineering, Mechanical Engineering, Rural Engineering, and Engineering Education.

A continuous and progressive course of work, beginning in the Freshman year, with a nearly uniform course for all students, and gradually separating in the three succeeding years until the class work is almost wholly specialized, has been found to be most satisfactory. A broad and liberal foundation in English, mathematics and history is laid in the Freshman and Sophomore years, and then the particular line of study desired is emphasized more and more until the end of the course.

In addition to the regular collegiate courses, a two-year Course is given in Agriculture. Many electives are offered in the second year.

There is also a Course in Sub-Collegiate Instruction for the benefit of students unable to obtain elsewhere adequate preparation for entrance into the Freshman Class.

Short Winter Courses in Agriculture, Horticulture and Engineering are given for the benefit of those who find it impossible to afford the time necessary for an extended course in these subjects.

The College, in co-operation with the State Department of Education, conducts a six-weeks' SUMMER SCHOOL, beginning this year on June 20th.

The purpose of the SUMMER SCHOOL is to provide a course of vocational training for teachers and prospective teachers of rural and graded schools. The work offered this year includes courses in Elementary Agriculture, Domestic Science and Art, Industrial Hand Work, Theory and Practice of Teaching, History of Mary-

land, State and National Constitutions, Chemistry, Physics, Surveying, Botany, Zoology and Entomology

A bulletin giving a full description of the courses is issued by the College. For full information address the Director of the Summer School.

A SUMMER SCHOOL for MINISTERS will be held from July 24th to August 1st for those who wish to broaden their field of service in the communities in which they labor. Courses will be given in Rural Sociology, Rural Economics, Religious Pedagogy and Agriculture. Further information concerning these courses may be obtained from Professor F. B. Bomberger, Dean of the Division of Rural Economics and Sociology.

A CONFERENCE on COUNTRY LIFE will be held for MINISTERS on August 2nd, 3rd and 4th. Leaders of national reputation will present matters of vital interest to the Church. Bulletins containing complete information concerning this Conference may be obtained upon request from Mr. B. H. Darrow, Secretary of the Young Men's Christian Association.

In the tabular statements of the courses the periods per week are given, the numbers in parenthesis denoting practical or laboratory periods, the others theoretical or recitation periods.

AGRICULTURAL EDUCATION COURSE.

The Course in Agricultural Education is arranged to give the student a broad general knowledge of agriculture, languages, science and pedagogy.

Students taking this course receive practically the same work during the first two years as those of the other agricultural courses. In the Junior and Senior years the agricultural work is continued, in addition to the special work in pedagogy and practice teaching which these students receive. Enough of agriculture is included in the course to enable the student to carry on farm operations in a scientific manner. The graduate is fitted not only to teach and supervise the teaching of agricultural subjects, but to manage school demonstration farms or conduct a farm of his own.

Students taking this course will be required to spend at least eight weeks of the summers following the Sophomore and Junior years in actual farm work on their home farms or on other accredited farms under the supervision of the College. All students will be required to keep notes and on their return to College to submit a written report of the summer's work and observations.

Agricultural Education Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400..	5		
English 220.....	4(2)	4(2)	4(2)
History 160.....	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360 !.....	3**	3**	3**
French 380 !.....	3**	3**	3**
Agronomy 20.....			3(2)
Animal Husbandry 40 ...	1(4)		
Animal Husbandry 41 ...		3(4)	
Botany 60.....			2(6)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420...	(4)		
Military Instruction	1(4)	1(4)	1(4)
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.....			
Junior Year.			
Mechanics and Sound 200, 203.....	2(4)		
Electricty and Magnetism 201, 204		2(4)	
Heat and Light 202, 205...			2(4)
Advanced Composition 223	1(2)	1(2)	1
Public Speaking 224.....	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
Psychology 1.....	4(2)		
History of Education 2 ...		4	
Principles of Education 3.			4
Grain Judging 25.....		(4)	
Animal Nutrition 43.....		3	2(4)
Stock Judging 46.....			2(4)*
Fruit Judging 262.....	(2)*		
Landscape Gardening 302.	(2)*		
Vegetable Pathology.....			2(4)*
Geology 86.....	2(2)		
Organic Chemistry 87.....	4		
Bacteriology 100		(8)	(8)*
Surveying 126.....			2(4)
Mechanical Drawing 421..	(4)		
Woodwork 423.....		(4)	
Military Instruction.....	1(4)	1(4)	1(4)

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 222.....	(2)	(2)	(2)
German 361.....	3*	3*	3*
French 381.....	3*	3*	3*
Farm Crops 21.....	2(2)		
Soils 22.....	2(4)	2(4)	
Fertilizers 23.....			2(4)
Pomology 260.....	1(4)		2(2)
Vegetable Culture 280.....		2(4)	1(4)
Landscape Gardening 300..		1(2)	
Home Grounds 301.....			(4)
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Entomology 242.....			2(4)
Chemistry 81.....	2(6)		
Quantitative Analysis 83...		1(8)	
Military Instruction	1(4)	1(4)	1(4)
Senior Year.			
English 226.....	(2)	(2)	1
Political Economy 142	4	4	4
Secondary Education 4....	3(2)		
Organization and Materials 5.....		3(2)	
Rural Organization 6.....			3(2)
Advanced Crops 26.....	2(4)*		
Advanced Soils 27.....	2(4)*		
Farm Management 28.....		2(4)	2(4)*
Dairy Management 49.....		2(4)	
Farm Poultry 50.....		3	
Live Stock Management 51			2(4)*
Animal Diseases 481.....			3(4)
Plant Breeding 268		3(2)	(4)**
Market Gardening 286.....			2(4)*
Amateur Floriculture 315..			2(4)*
Farm Forestry 320.....			2(4)
Agricultural Chemistry 91.	4		
Agricultural Analysis 92...	(4)		
Farm Drainage 128.....	(4)		
Farm Machinery 437.....	2(4)		
Farm Buildings 441.....			(4)**
Research and Thesis 7.....		(2)	(2)
Military Instruction	1(4)	1(4)	1(4)
.....			

*Alternative.

!For present, students offering entrance credits in German will take French and vice versa.

AGRONOMY COURSE.

The four-year Course in Agronomy is designed to fit the graduate for conducting practical operations on the farm, or, should taste or circumstances so direct, to prosecute successfully advanced scientific research along the lines of agronomy, or if occasion requires, to act as county demonstrators or advisers. With these ends in view, the Course has been made at once comprehensive and technical. It is comprehensive enough to include whatever is necessary

Agronomy Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400..	5		
English 220.....	4(2)	4(2)	4(2)
History 160.....	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360!.....	3**	3**	3**
French 380!.....	3**	3**	3**
Agronomy 20.....			3(2)
Animal Husbandry 40 ...	1(4)		
Animal Husbandry 41 ...		3(4)	
Botany 60.....			2(6)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420...	(4)		
Military Instruction.....	1(4)	1(4)	1(4)
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.....			
Junior Year.			
Mechanics and Sound 200, 203.....	2(4)		
Electricity and Magnetism 201, 204.....		2(4)	
Heat and Light 202, 205...			2(4)
Advanced Composition 223	1(2)	1(2)	1
Public Speaking 224.....	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
Psychology 1.....	4		
Advanced Soils 24.....	(4)		
Grain Judging 25.....		1(4)	
Animal Nutrition 43.....		3(2)	
Stock Judging 46.....			2(4)
Plant Pathology 66.....			2(4)
Geology 86.....	2(2)	2	
Organic Chemistry 87....	4		
Bacteriology 100.....		(8)	(8)
Surveying 126.....			2(4)
Mechanical Drawing 421.	(4)		
Woodwork 423.....		(4)	
Military Instruction.....	1(4)	1(4)	1(4)

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 222	(2)	(2)	(2)
German 361.....	3*	3*	3*
French 381	3*	3*	3*
Farm Crops 21.....	2(2)		
Soils 22.....	2(4)	2(4)	
Fertilizers 23.....			2(4)
Pomology 260.....	1(4)		2(2)
Vegetable Culture 280.....		2(4)	1(4)
Landscape Gardening 300.		1(2)	
Home Grounds 301.....			(4)
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Entomology 242.....			2(4)
Chemistry 81.....	2(6)		
Quantitative Analysis 83..		1(8)	
Military Instruction.... ..	1(4)	1(4)	1(4)
Senior Year.			
English 226.....	(2)	(2)	1
Political Economy 142	4	4	4
Advanced Crops 26.....	2(4)	(4)	
Advanced Soils 27.....	2(4)		
Farm Management 28.....		2(4)	2(4)
Dairy Management 49.....		2(4)	
Farm Poultry 50.....		3	
Anatomy and Physiology 480.....			
		3	
Animal Diseases 481			3(4)
Plant Breeding 268.....		3(2)	(4)
Farm Forestry 320.....			2(4)
Agricultural Chemistry 91	4		
Agricultural Analysis 92...	(4)		
Farm Drainage 128.....	(4)		
Farm Machinery 437.....	2(4)		
Farm Buildings 441.....			1(4)
Research and Thesis 29 ..			(4)
Military Instruction.....	1(4)	1(4)	1(4)
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*Alternative.

!For present, students offering entrance credits in German will take French and vice versa.

for the complete development of the work, yet technical enough to make the student feel that he is a specialist and equipped for special work.

Students taking this Course will be required to spend at least eight weeks of the summers following the Sophomore and Junior years in actual farm work on their home farms or on other accredited farms under the supervision of the College. All students will be required to keep notes and on their return to College to submit a written report of the summer's work and observations.

ANIMAL HUSBANDRY COURSE.

The purpose of the Course in Animal Husbandry is to fit the graduate to carry out successfully the operations pertaining to general farming, to become an expert in the raising and feeding of live stock, to pursue scientific investigations along lines pertaining to animal husbandry, or to act in the capacity of an adviser or demonstrator in rural communities. Therefore, the curriculum has been outlined to include, in addition to the subjects necessary for the development of a specialist in animal husbandry, those which will give a broad training in agriculture and other cultural branches.

Students taking this Course will be required to spend at least eight weeks of the summers following the Sophomore and Junior years in actual farm work on their home farms or on other accredited farms under the supervision of the College. All students will be required to keep notes and on their return to College to submit a written report of the summer's work and observations.

Animal Husbandry Course.

Subject.	Term. I	II	III
Freshman Year.			
Plane Trigonometry 400	5		
English 220	4(2)	4(2)	4(2)
History 160	3*	3*	3*
Latin 340	3*	3*	3*
German 360 !	3**	3**	3**
French 380 !	3**	3**	3**
Agronomy 20			3(2)
Animal Husbandry 40	1(4)		
Animal Husbandry 41		3(4)	
Botany 60			2(6)
Zoology 240	2(4)	2(4)	
Chemistry 80		4(2)	4(2)
Freehand Drawing 420	(4)		
Military Instruction	1(4)	1(4)	1(4)
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.....			
Junior Year.			
Mechanics and Sound 200, 203	2(4)		
Electricity and Magnetism 201, 204		2(4)	
Heat and Light 202, 205			2(4)
AdvancedComposition 223	1(2)	1(2)	1
Public Speaking 224	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141			3
Psychology 1	4		
Breeds and Breeding 42	(4)		
Animal Nutrition 43		3(2)	2(4)
Principles of Breeding 44		3	
Stock Judging 46			2(4)
Geology 86	2(2)	2	
Organic Chemistry 87	4		
Bacteriology 100		(8)	(8)
Surveying 126			2(4)
Mechanical Drawing 421	(4)		
Woodwork 423		(4)	
Military Instruction	1(4)	1(4)	1(4)

Subject.	Term. I	II	III
Sophomore Year.			
Composition 221	1(2)	1(2)	1(2)
Public Speaking 222	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Farm Crops 21	2(2)		
Soils 22	2(4)	2(4)	
Fertilizers 23			2(4)
Pomology 260	1(4)		2(2)
Vegetable Culture 280		2(4)	1(4)
Landscape Gardening 300		1(2)	
Home Grounds 301			(4)
Plant Histology 61	1(6)		
Plant Physiology 62		2(4)	1(4)
Entomology 242			2(4)
Chemistry 81	2(6)		
Quantitative Analysis 83		1(8)	
Military Instruction	1(4)	1(4)	1(4)
Senior Year.			
English 226	(2)	(2)	1
Political Economy 142	4	4	4
Advanced Crops 26	2(4)		
Farm Management 28		2(4)	2(4)
Animal Nutrition 47	3(4)		
Dairying 48	3(8)		
Farm Poultry 50		3	
Live Stock Management 51			2(4)
Anatomy and Physiology 480		3	
Animal Diseases 481			3(4)
Farm Forestry 320			2(4)
Animal Parasites 247		2(4)	
Bacteriology 101		1(6)	
Farm Machinery 437	2(4)		
Farm Buildings 441			1(4)
Research and Thesis 52		(4)	
Military Instruction	1(4)	1(4)	1(4)
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*Alternative.

!For present, students offering entrance credits in German will take French and vice versa.

TWO-YEAR AGRICULTURAL COURSE.

A large number of young men seeking to better themselves in their chosen profession of farming are calling for instruction in those courses pertaining to practical agriculture. Many of them have neither the time nor means at hand to take the full four-year Course, but while away in school they wish to gain the greatest possible amount of instruction and assistance which is particularly ap-

plicable to the farm. They realize that the farm can no longer be run in the old-time haphazard way, that there is a demand for skill and the highest order of intelligence to make a success on the farm, as in any other line of human endeavor, and that brains must be

Two-Year Agricultural Course.*

Subject.	Term. I	Term. II	Term. III
First Year.			
Farm Accounts	2		
English	4(2)	4(2)	3(2)
Farm Literature	(2)	(2)	(2)
Farm Crops and Soils	3(2)		3(4)
Animal Husbandry	2(4)	3(2)	3(4)
Horticulture	2(4)	3(6)	2(4)
Farm Botany	1(4)		
Farm Zoology and Entomology		2(2)	2(2)
Farm Chemistry			2(2)
Farm Drawing	(4)		
Farm Woodwork		(4)	
Farm Machinery		2(4)	
Military Instruction	1(4)	1(4)	1(4)
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Subject.	Term. I	Term. II	Term. III
Second Year.			
Business Law		3	
Rural Organization			2
Agronomy	4(8)‖	2(4)‖	4(8)‖
Fertilizers		3(2)	
Farm Crops		1(4)	3(2)
Farm Management		2(2)	
Animal Industry	4(8)‖	2(4)‖	4(8)‖
Animal Feeding	3(2)		
Farm Poultry			2
Animal Diseases		3(2)	
Horticulture	4(8)‖	2(4)‖	4(8)‖
Farm Forestry			2(4)
Plant Diseases	2(2)		
Sprays and Spraying		1(2)	(4)
Farm Chemistry	4(4)		
Farm Bacteriology		(4)	
Farm Water Supply and Sewerage	(4)		
Farm Drainage			2(2)
Farm Buildings	(4)		
Military Instruction	1(4)	1(4)	1(4)

*A description of the courses given will be found at the end of courses offered in each Department involved.

‖The student, after consultation with the Professor in charge of the Course, will elect from the courses offered in agronomy, animal industry and horticulture a sufficient number of subjects to make up the required number of periods.

planted with each little seed, and also put into the feeding trough for the animal. To meet the demand for instruction along these lines, and for a better understanding of the underlying principles of successful agriculture, a short course of two years has been provided.

It embraces much of the technical work of the four-year Course, and is especially designed to lay a foundation that will secure success in practical farming, which, as it must be conducted today, is a union of many interests. To enter this Course the applicant must be not less than sixteen years of age and must satisfy the College authorities by examination or otherwise that he has preparation at least equal to the work of the seventh grade of the Maryland public schools.

Students taking this Course are required to spend not less than ten weeks during the summer between the First and Second year in actual farm work on some accredited farm under the supervision of the College.

SHORT WINTER COURSES.

For men and women who can spare from one to ten weeks only from their home duties the College offers a series of short courses occupying from one to two weeks each, beginning after the Christmas vacation.

For 1917 the arrangement will be:

First week—Soils and Fertilizers.

Second week— { Farm Crops. / Domestic Science.

Third week—Poultry Husbandry.

Fourth and fifth week—Horticulture.

Sixth week—Horses and Beef Cattle.

Seventh week—Swine and Sheep Husbandry.

Eighth week—Dairy Husbandry.

Ninth week—Farm Implements and Motors.

Tenth week—Farm Carpentry, Blacksmithing and Pipe Fitting.

Experience has demonstrated the advantage of dividing the work into short periods, during which time the attention of the student is engrossed wholly with one subject. It enables the student to concentrate his efforts and affords opportunity for those who are interested in but one or two subjects, such as poultry husbandry or domestic science, for example, to take what they desire with the greatest economy of time.

No charge is made to short course students for the use of laboratories. Good board at moderate rates can be secured in the neighborhood. For more detailed information regarding these courses, write for bulletin and folders.

HORTICULTURAL COURSE.

Through the organization of the Division of Horticulture an opportunity is presented for students in the four-year Course to spe-

Horticultural Course.

Subject.	Term. I	II	III
Freshman Year.			
Plane Trigonometry 400..	5		
English 220.....	4(2)	4(2)	4(2)
History 160	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360†	3**	3**	3**
French 380†	3**	3**	3**
Agronomy 20			3(2)
Animal Husbandry 40....	1(4)		
Animal Husbandry 41....		3(4)	
Botany 60.....			2(6)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420...	(4)		
Military Instruction	1(4)	1(4)	1(4)
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.....			
Junior Year.			
Mechanics and Sound 200. 203.....	2(4)		
Electricity and Magnetism 201, 204.....		2(4)	
Heat and Light 202, 205...			2(4)
AdvancedComposition 223	1(2)	1(2)	1
Public Speaking 224	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
Psychology 1.....	4		
Commercial Pomology 261	2(4)‖		
Fruit Judging 262.....	(2)‖	(2)‖	
Practical Pomology 263...		2(4)‖	(4)‖
Small Fruit Culture 264...			2(2)‖‡
Vegetable Forcing 281....	2(4)‡	2(4)‡	(4)‡
Vegetable Literature 282.	(2)‡	1‡	
Landscape Gardening 302	(2)§		
Floriculture 303.....	2(4)§		
Commercial Floriculture 304, 305.....		3(4)§	2(6)§
Vegetable Pathology 66...			2(4)
EconomicEntomology 244		3(2)	1(4)
Organic Chemistry 87....	4		
Bacteriology 100.....		(8)	
Surveying 126			2(4)
Mechanical Drawing 421.	(4)		
Woodwork 423.....		(4)	
Military Instruction.....	1(4)	1(4)	1(4)
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.....			

Subject.	Term. I	II	III
Sophomore Year.			
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 222	(2)	(2)	(2)
German 361.....	3*	3*	3*
French 381.....	3*	3*	3*
Farm Crops 21.....	2(2)		
Soils 22.....	2(4)	2(4)	
Fertilizers 23.....			2(4)
Pomology 260.....	1(4)		2(2)
Vegetable Culture 280.....		2(4)	1(4)
Landscape Gardening 300.		1(2)	
Home Grounds 301.....			(4)
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Entomology 242			2(4)
Chemistry 81.....	2(6)		
Quantitative Analysis 83..		1(8)	
Military Instruction.....	1(4)	1(4)	1(4)
Senior Year.			
English 226.....	(2)	(2)	1
Political Economy 142.....	4	4	4
Farm Management 28.....		2(4)	2(4)
Dairy Management 49.....		2(4)!	
Farm Poultry 50.....		3!	
Systematic Pomology 265.	2(4)‖	1(4)‖	
Advanced Pomology 266 ..	2(4)‖		2(4)‖
Pomology 267.....		3‖	
Plant Breeding 268.....		3(2)	(4)
Commercial Vegetable Gardening 283.....	1(4)‡	2(4)‡	2(4)‡
Vegetable Gardening 284..	1(2)‡		
SystematicOlericulture 285	1(4)‡	(4)‡	1(4)‡
Market Gardening 286.....			2(4)‖
Greenhouse Construction 306.....	2(4)§		
Landscape Design 307, 309.	2(4)§	2(4)§	
Civic Art 308.....	2§		
Landscape Practice 310....		(4)§	1(4)§
Plant Materials 311.....		2(2)§	
Floral Decoration 312.....		1(4)§	
Garden Flowers 313			2(4)§
Tree Repair 314.....			1(4)§
Farm Forestry 320.....			2(4)
Agricultural Chemistry 91	4		
Agricultural Analysis 92 ..	(4)		
Farm Machinery 437.....	2(4)		
Research and Thesis 269. 287.	(4)‖ (4)‡	(6)‖ (6)‡	(4)‖ 1(4)‡
Military Instruction.....	1(4)	1(4)	1(4)

*Alternative.

!Alternative for students in Pomology and Vegetable Gardening. If Dairy Management be elected Research and Thesis must be reduced to 4 practical periods.

‖For students specializing in Pomology.

‡For students specializing in Vegetable Gardening.

§For students specializing in Landscape Gardening and Floriculture.

†For present, students offering entrance credits in German will take French and vice versa.

cialize in either pomology, vegetable culture or landscape gardening and floriculture.

These courses are designed to fit the student for conducting practical operations in horticulture on the farm, or to continue scientific research work and teaching in his chosen field. Practical work is made a prominent feature of the course. In the Freshman and Sophomore years the work is not materially different from that of the Agricultural and Biological Courses, as all students are required to take certain fundamental subjects. In the Junior and Senior years the courses become specialized.

The College and Experiment Station farm, orchards, greenhouses, etc., together with the close proximity of the Institution to the United States Department of Agriculture greenhouses and experiment farms, offer unusual opportunities to the students in horticulture.

BIOLOGICAL COURSE.

The Biological Course, while offering a general education and special training in the natural sciences, is outlined in particular for those who wish to specialize in some branch of botany or zoology. It aims to fit men for practical work in the field of plant pathology and entomology, but will also give training for special work in the pure sciences.

In addition, this Course is specially valuable in preparing students who wish to enter the medical profession, particularly those who expect to enter the highest grade medical schools, which require for entrance a four year collegiate course in sciences and languages. These students will be required to substitute organic chemistry for some subject given in the regular Biological Course.

There are many opportunities for scientific workers in connection with the Agricultural investigations of the Federal Government and of the State Experiment Stations, as well as in the State inspection work, for which this Course gives training. In fact, it is now difficult to secure men trained for such work. Full opportunity is given for the student to develop his natural resources and to learn to do work on his own responsibility. A large part of his time is spent in both practical and theoretical biological studies, without neglect-

ing the cultural studies which are a necessary foundation for every specialist.

Biological Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400..	5		
English 220.....	4(2)	4(2)	4(2)
History 160.....	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360‡	3**	3**	3**
French 380‡.....	3**	3**	3**
Agronomy 20.....			3(2)
Animal Husbandry 40....	1(4)		
Animal Husbandry 41....		3(4)	
Botany 60.....			2(6)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420...	(4)		
Military Instruction.....	1(4)	1(4)	1(4)
.....			
.....			
Junior Year.			
Mechanics and Sound 200, 203	2(4)		
Electricity and Magnetism 201, 204.....		2(4)	
Heat and Light 202, 205...			2(4)
AdvancedComposition 223	1(2)	1(2)	1
Public Speaking 224.....	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
Psychology 1.....	4		
Morphology 63.....	2(4)		
Economic Plants 64.....		1(4)†	
Vegetable Pathology 66..			2(4)
Botany 67...			2(6)†
Economic Zoology 243	1(4)	2(4)	
EconomicEntomology 244		3(2)	1(4)
Entomology 245		1(4) !	2(6)!
Organic Chemistry 87....	4		
Bacteriology 100.....		(8)	(8)
Military Instruction.....	1(4)	1(4)	1(4)

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 222.....	(2)	(2)	(2)
German 361.....	3*	3*	3*
French 381.....	3*	3*	3*
Farm Crops 21	2(2)		
Pomology 260.....	1(4)		2(2)
Vegetable Culture 280....		2(4)	1(4)
Landscape Gardening 300.		1(2)	
Home Grounds 301.....			(4)
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Zoology 241.....	2(4)	2(4)	2(4)
Entomology 242.....			2(4)
Chemistry 81.....	2(6)		
Quantitative Analysis 83.		1(8)	
Military Instruction.....	1(4)	1(4)	1(4)
Senior Year.			
English 226.....	(2)	(2)	1
Political Economy 142....	4	4	4
German 362.....	3*	3*	3*
French 382.....	3*	3*	3*
Advanced Botany 68	7(12)†	7(12)†	7(12)†
Advanced Entomology 246	7(12)!	7(12)!	7(12)!
Research and Thesis 69,248	(8)	(8)	(8)
Military Instruction.....	1(4)	1(4)	1(4)
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*Alternative.

†For students specializing in Botany.

!For students specializing in Entomology.

‡For present, students offering entrance credits in German will take French and vice versa.

CHEMICAL COURSE.

The Course in Chemistry differs but little from the other courses until the beginning of the Sophomore Year and the work in the Freshman Year of any of the four-year courses will prepare for

it, as the amount of chemistry is the same in all courses to the beginning of the Second Term of the Sophomore year and the demands on the agricultural or technical chemist are now so varied that a foundation with more of the essentials of the agricultural or the engineering courses is often desirable.

Beginning with the Second Term of the Sophomore year the major part of the student's time is devoted to chemistry, the practical work in the laboratory occupying approximately half of his time. The course is essentially a course in agricultural chemistry, fitting the graduate for positions in agricultural colleges, experiment stations and the United States Department of Agriculture.

Chemical Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400..	5		
Algebra 401.....		3	
Analytics 402.....			5
English 220.....	4(2)	4(2)	4(2)
History 160.....	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360†.....	3**	3**	3**
French 380†.....	3**	3**	3**
Botany 60.....			2(4)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420....	(4)		
Mechanical Drawing 421..		(4)	
Woodwork 423.....	(6)		
Military Instruction.....	1(4)	1(4)	1(4)
.....			
.....			
.....			
.....			
.....			
Junior Year.			
AdvancedComposition 223	1(2)	1(2)	1
Public Speaking 224	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
German 362.....	3*	3*	3*
French 382.....	3*	3*	3*
Micro Botany 65.....			2(4)
Geology 86.....	2(2)	2	
Organic Chemistry 88.....	3(4)	3(4)	3(4)
Quantitative Analysis 89..	1(12)	1(14)	1(12)
Stoichiometry 90.....	1	1	1
Military Instruction	1(4)	1(4)	1(4)

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Analytics 402.....	5		
Calculus 403.....		5	
Mechanics and Sound 200, 203.....	3(4)		
Electricity and Magnetism 201, 204.....		3(4)	
Heat and Light 202, 205....			3(4)
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 222.....	(2)	(2)	(2)
German 361	3*	3*	3*
French 381.....	3*	3*	3*
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Chemistry 81.....	2(6)		
Qualitative Analysis 82.....		1(8)	
Chemistry 84.....			2(4)
Mineralogy 85.....			1(4)
Elementary Electricity 182 183..			3(2)
Military Instruction.....	1(4)	1)4)	1(4)
Senior Year.			
English 226.....	(2)	(2)	1
Political Economy 142.....	4	4	4
Argicultural Chemistry 91.	4		
Agricultural Analysis 92..	(12)		
Physiological Chemistry 93	4(4)		
Physical Chemistry 94.....		3(14)	3
Inorganic Chemistry 95....		3	3
Industrial Chemistry 96...		3	3
Chemistry 97.....			(8)
Bacteriology 101.....	1(6)	1(6)	1(6)
Research and Thesis 98....			(6)
Military Instruction.....	1(4)	1(4)	1(4)

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

CANNING COURSE.

The great importance of the canning industry in Maryland; the fact that it is, to a great extent, an agricultural industry, and the further fact that the suggestion of a Course has met with so many hearty indorsements from prominent canners, has caused the College authorities to establish a Course in Canning, in order that young men interested may have an opportunity to become acquainted with the underlying sciences, and at the same time secure a liberal education.

Canning Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400..	5		
Algebra 401.....		3	
English 220.....	4(2)	4(2)	4(2)
History 160.....	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360†.....	3**	3**	3**
French 380†.....	3**	3**	3**
Agronomy 20.....			3(2)
Botany 60.....			2(6)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420...	(4)		
Mechanical Drawing 421.		(4)	
Woodwork 423.....	(6)		
Military Instruction.....	1(4)	1(4)	1(4)
.....			
.....			
.....			
.....			
.....			
.....			
Junior Year.			
AdvancedComposition 223	1(2)	1(2)	1
Public Speaking 224.....	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
German 362.....	3*	3*	
French 382.....	3*	3*	
Fruit Judging 262.....	(2)		
Small Fruit Culture 264...			2(2)
Vegetable Pathology 66..			2(4)
Organic Chemistry 88....	3(4)	3(4)	3(4)
Quantitative Analysis 89.	(8)		
Bacteriology 100.....		(8)	(8)
Canning Technology.....	2(4)	5(4)	2(4)
Electrical Laboratory 186.	(4)		
Military Instruction.....	1(4)	1(4)	1(4)

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Mechanics and Sound 200, 203.....	3(4)		
Electricity and Magnetism 201, 204.....		3(4)	
Heat and Light 202, 205....			3(4)
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 222	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Agronomy 21.....	(2)		
Soils 22.....	2(4)		
Vegetable Culture 280.....		2(4)	1(4)
Landscape Gardening 300..		(2)	
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Entomology 242.....			2(4)
Chemistry 81.....	2(6)		
Quantitative Analysis 83..		1(8)	
Elementary Electricity 182, 183.....			3(2)
Military Instruction.....	1(4)	1(4)	1(4)
Senior Year.			
English 226.....	(2)	(2)	1
Political Economy 142.....	4	4	4
Plant Breeding 268.....		3(2)	
Commercial Vegetable Gardening 284..	1(4)	2(4)	2(4)
Vegetable Gardening 284..	1(2)		
Agricultural Chemistry 91.	4		
Agricultural Analysis 92...	(8)		
Physical Chemistry 94.....		3(4)	3
Industrial Chemistry 96....		3	3
Chemistry 97.....			(4)
Canning Technology.....	3(4)	2(4)	3(6)
Practical Problems 127.....	(4)		
Research and Thesis.....			(4)
Military Instruction.....	1(4)	1(4)	1(4)

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

During the first two years of the Course the studies will not differ much from those of the other courses. After this a large part of the student's time will be occupied with sciences relating directly to the canning industry, such as bacteriology, chemistry, agriculture, horticulture, and canning technology. This latter will cover a wide range and will include the theory and practice of canning in various lines, experimental work, and lectures from persons of national reputation. Assistance in these lectures has been promised by officers of the National Canners' Association and others.

A canning expert is to be engaged to take charge of the technical instruction in canning, which will include both theoretical and laboratory work.

Routine and factory experience are expected to be gained by students spending at least two summers, usually devoted to vacation, in a canning factory.

GENERAL SCIENCE COURSE.

The General Science Course is offered to those young men who have not chosen as their vocation in life any of the technical professions, but who are seeking for such general culture as will fit them to become, after graduation, useful members of society. Young men desiring to study law, or medicine, or the liberal arts, or to become teachers, will find in the curriculum of this Course a highly satisfactory preparation for such work. While emphasis has been placed upon subjects, such as English, language, literature, history, mathematics, etc., the natural sciences occupy a prominent place in the Course and the range of electives will enable each to choose for himself, under certain necessary regulations, such a group of studies as will be best adapted to his own peculiar requirements.

A wide range of electives is offered in order to meet as far as possible the needs of every student. At the opening of the session the student must select with the approval of the Dean of the Division a consistent group of courses for the year. No change may be made in this group later in the session except with the approval of the Dean.

General Science Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400	5		
Algebra 401		3	
Analytics 402			5
English 220	4(2)	4(2)	4(2)
Latin 340	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Botany 60			2(4)
Zoology 240	2(4)	2(4)	
Chemistry 80		4(2)	4(2)
Freehand Drawing 420	(4)		
Mechanical Drawing 421		(4)	
Woodwork 423	(6)		
Military Instruction	1(4)	1(4)	1(4)
Sophomore Year.			
Analytics 402	5***		
Calculus 403		5***	4****
Physics 200, 203	3(4)		
Physics 201, 204		3(4)	
Physics 202, 205			3(4)
Composition 221	1(2)	1(2)	1(2)
Public Speaking 222	(2)	(2)	(2)
Library Science			1(4)
History 161	5***	5***	4****
Latin 341	5***	5***	4****
German 361	3*	3*	3*
French 381	3*	3*	3*
Soils 22	2(4)**	2(4)**	
Vegetable Culture 280		2(4)**	1(4)***
Plant Histology 61	1(6)**		
Plant Physiology 62		2(4)**	1(4)***
Zoology 241	2(4)**	2(4)**	2(4)**
Entomology 242			2(4)**
Chemistry 81	2(6)		
Quantitative Analysis 83		1(8)	
Mineralogy 85			1(4)***
Military Instruction	1(4)	1(4)	1(4)
Junior Year.			
Advanced Composition 223	1(2)	1(2)	1
Public Speaking 224	(2)	(2)	(2)
English Literature 225	2	2	2
Civil Government 140	3	3	
Business Law 141			3
History 162	3	3	3
Psychology 1	4		
History of Education 2		4	
Principles of Education 3			4
German 362	3*	3*	3*
French 382	3*	3*	3*
Principles of Breeding 44		3	
Micro Botany 65			2(4)**
Vegetable Pathology 66			2(4)**
Geology 86	2(2)		
Organic Chemistry 87	4		
Bacteriology 100		(8)	(8)
Surveying 126			2(4)**
Military Instruction	1(4)	1(4)	1(4)
Senior Year.			
English 226	(2)	(2)	1
Advanced English 227	2	4	3
Political Economy 142	4	4	4
Political Science	3*	4*	3*
Advanced History	3*	4*	3*
German 362	3**	3**	3**
French 382	3**	3**	3**
Farm Forestry			2(4)
Electives‡	12	9	7
Military Instruction	(1)4	1(4)	1(4)

*Alternative.

‡The electives may be selected from the following list: First Term, 5 periods in Chemistry 89 or Mathematics 403; 4 periods in Floriculture 303 or Mechanics 122; and 3 periods in Animal Husbandry 40 or Pomology 260; Second Term, 4 periods in Dairying 49 or Electricity 180 and 181; 3 periods in Grain Judging 25, Poultry 50 or Mechanics of Materials 125; and 2 periods in Landscape Gardening 300, Geology 86 or Mathematics 400; Third Term, 4 periods in Agronomy 20, Market Gardening 286, Floriculture 315 or Electricity 180 and 181; and 3 periods in Pomology 260 or 264, Steam Engines 428 or Farm Buildings 441.

†For present, students offering entrance credits in German will take French and vice versa.

CIVIL ENGINEERING COURSE.

This Course offers a young man an opportunity to obtain training in civil engineering which will enable him to engage in practical engineering work in the field or in the drafting room with the assurance that he has the necessary preparation to profit by the experience thus afforded; or which will entitle him to advanced standing, if he desires to pursue a more extended course at a technical school of a higher grade. The curriculum, as outlined, includes not only studies having cultural value, but the sciences which form the basis of engineering. Students who have found themselves de-

Civil Engineering Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Trigonometry 400	5	2	
Algebra 401		3	
Analytics 402			5
English 220	4(2)	4(2)	4(2)
History 160	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Chemistry 80		4(2)	4(2)
Engineering Drawing 120	(4)		
Surveying 121		2	(4)
Freehand Drawing 420	(4)		
Mechanical Drawing 421	(4)	(4)	(4)
Woodwork 423	(6)		
Military Instruction	1(4)	1(4)	1(4)
.....			
.....			
Junior Year.			
Calculus 403	5		
Advanced Composition 223	1(2)	1(2)	1
Public Speaking 224	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141			3
Geology 86	2(2)	2	
Engineering Drawing 120		(6)	(8)
Surveying 121	(4)		
Mechanics 122	4		
Railway Engineering 123		3	3
Structural Design 124		2(4)	2(4)
Mechanics of Materials 125		3	5
Practical Problems 127			(8)
Dynamos 184	3		
Electrical Laboratory 186	(4)		
Graphics 431		4	
Military Instruction	1(4)	1(4)	1(4)

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Analytics 402	5		
Calculus 403		5	4
Mechanics and Sound 200, 203	3(4)		
Electricity and Magnetism 201, 204		3(4)	
Heat and Light 202, 205			3(4)
Composition 221	1(2)	1(2)	1(2)
Public Speaking 222	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Chemistry 81	2(6)		
Mineralogy 85			1(4)
Surveying 121	(4)	4	2(4)
Descriptive Geometry 424	(4)	3(4)	2(2)
Military Instruction	1(4)	1(4)	1(4)
Senior Year.			
English 226	(2)	(2)	1
Political Economy 142	4	4	4
Practical Problems 127	(8)	(4)	(4)
Concrete 129	4		
Hydraulics 130	4		
Estimates of Cost 131		1(4)	
Geodesy 132		3	
Highways 133			5
Contracts and Specifications 134			2
Structural Design 433	2(4)	2(4)	2(4)
Mechanics of Engineering 434	4	4	3
Hydromechanics 438		4	
Heating and Ventilation 442			2(4)
Military Instruction	1(4)	1(4)	1(4)

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

ficient in ability to learn mathematics are not advised to enter an engineering course.

All engineering students in the Junior and Senior Classes are required to spend a portion of their time in the reading of the current engineering magazines.

ELECTRICAL ENGINEERING COURSE.

This Course was introduced because of the great demand for young men who are not only well trained in the practical construc-

Electrical Engineering Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Trigonometry 400	5	2	
Algebra 401		3	
Analytics 402			5
English 220	4(2)	4(2)	4(2)
History 160	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Chemistry 80		4(2)	4(2)
Surveying 121			(4)
Freehand Drawing 420	(4)		
Mechanical Drawing 421	(4)	(4)	(4)
Technical Instruction 422	2		
Woodwork 423	(6)	(4)	
Military Instruction	1(4)	1(4)	1(4)
.....			
.....			
.....			
Junior Year.			
Calculus 403	5		
AdvancedComposition 223	1(2)	1(2)	1
Public Speaking 224	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141			3
Mechanics 122	4		
Mechanics of Materials125		3	5
Dynamos 185	3	4	3
Electrical Laboratory 187	(8)	(4)	(8)
Batteries 188			2
Electric Machine Design 189			2(4)
Machine Design 429	1(4)	2(4)	
Machine Work 430		(4)	(4)
Graphics 431		4	
Military Instruction	1(4)	1(4)	1(4)

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Analytics 402	5		
Calculus 403		5	4
Mechanics and Sound 200, 203	3(4)		
Electricity and Magnetism 201, 204		3(4)	
Heat and Light 202, 205			3(4)
Composition 221	1(2)	1(2)	1(2)
Public Speaking 222	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Chemistry 81	2(6)		
Electricity 180, 181		3(2)	3(2)
Descriptive Geometry 424	(4)	3(4)	2(2)
Blacksmithing 425	(4)		
Steam Engines 423			3
Military Instruction	1(4)	1(4)	1(4)
Senior Year.			
English 226	(2)	(2)	1
Political Economy 142	4	4	4
Hydraulics 130	4		
Electric Machine Design 189, 196	(4)		1(8)
Alternators 190	5	5	3
Electrical Laboratory 191	(8)	(8)	(8)
Electric Lighting 192	2	2	
Electric Power Plants 193		2	2
Telephones and Telegraphs 194, 195		2(2)	2(2)
Electric Railways 197			3
Thermodynamics 436	3		
Hydromechanics 438		4	
Military Instruction	1(4)	1(4)	1(4)
.....			

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

tion and operation of electrical machines, but who have a thorough knowledge of the principles and laws controlling the phenomena and forces with which they have to deal.

The general plan of the Course is to make the student thoroughly acquainted with the scientific laws which are the basis of the profession, and at the same time to train him to adapt the laws to practice, to use his own judgment, and to apply honest and accurate methods in all his work.

The curriculum, as outlined, includes those studies which provide a broad general culture, as well as a good foundation for the engineering work which follows. From the beginning of the Second Term of the Sophomore year the electrical training extends continuously throughout the Course.

MECHANICAL ENGINEERING COURSE.

The curriculum of the several years of this Course is outlined so as to give general culture as well as a proper foundation for the profession of Mechanical Engineer.

Young men not having a natural taste for mathematics and the handling of tools are advised not to pursue this Course. The practical work of this Course is most thorough. The student is familiarized from the first with the reading of engineering drawings and with the use of tools and implements used in wood and iron work. He is given daily practice in the shops and is encouraged to develop whatever inventive talent he may have. Results have shown that students completing this Course have no difficulty in securing employment immediately upon graduation in the field of mechanics or mechanical engineering.

Mechanical Engineering Course.

Subject.	Term. I	II	III
Freshman Year.			
Trigonometry 400	5	2	
Algebra 401		3	
Analytics 402			5
English 220	4(2)	4(2)	4(2)
History 160	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Chemistry 80		4(2)	4(2)
Freehand Drawing 420	(4)		
Mechanical Drawing 421	(4)	(4)	(4)
Technical Instruction 422	2		
Woodwork 423	(6)	(4)	(4)
Military Instruction	1(4)	1(4)	1(4)
Junior Year.			
Calculus 403	5		
Advanced Composition 223	1(2)	1(2)	1
Public Speaking 224	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141			3
Mechanics 122	4		
Mechanics of Materials 125		3	5
Dynamos 184	3	4	
Electrical Laboratory 186	(4)	(4)	
Machine Design 429	1(4)	2(4)	3(8)
Machine Work 430	(4)	(4)	(12)
Graphics 431		4	
Experimental Engineering 432			(4)
Military Instruction	1(4)	1(4)	1(4)

Subject.	Term. I	II	III
Sophomore Year.			
Analytics 402	5		
Calculus 403		5	4
Mechanics and Sound 200, 203	3(4)		
Electricity and Magnetism 201, 204		3(4)	
Heat and Sound 202, 205			3(4)
Composition 221	1(2)	1(2)	1(2)
Public Speaking 222	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Chemistry 81	2(6)		
Descriptive Geometry 424	(4)	3(4)	2(2)
Blacksmithing 425	(4)	(4)	
Technical Mechanics 426		2	
Foundry 427			(8)
Steam Engines 428			3
Military Instruction	1(4)	1(4)	1(4)
Senior Year.			
English 226	(2)	(2)	1
Political Economy 142	4	4	4
Hydraulics 130	4		
Experimental Engineering 432	(4)	(8)	(8)
Structural Design 433	2(4)	2(4)	3(6)
Mechanics of Engineering 434	4	4	3
Kinematics 435	1(4)		
Thermodynamics 436	3	4	3
Hydromechanics 438		4	
Heating and Ventilation 442			2(4)
Military Instruction	1(4)	1(4)	1(4)

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

RURAL ENGINEERING COURSE.

This Course is offered to students who wish to become proficient in such branches of engineering as relate in particular to the problems of rural communities. The broad training offered in engineering is supplemented by instruction in those agricultural subjects which will give the student a greater breadth of view concerning rural problems requiring the services of an engineer, and, if he should elect to settle in the country for the practice of his profession,

will enable him to conduct his farming operations with pleasure and profit.

Rural Engineering Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Trigonometry 400	5	2	
Algebra 401		3	
Analytics 402			5
English 220	4(2)	4(2)	4(2)
History 160	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Chemistry 80		4(2)	4(2)
Surveying 121		2	(4)
Freehand Drawing 420	(4)		
Mechanical Drawing 421	(4)	(4)	(4)
Technical Instruction 422	2		
Woodwork 423	(6)		
Military Instruction	1(4)	1(4)	1(4)
.....			
.....			
Junior Year.			
Calculus 403	5		
Advanced Composition 223	1(2)	1(2)	1
Public Speaking 224	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141			3
Agronomy 20			3(2)
Animal Husbandry 45			(2)
Geology 86	2(2)	2	
Mechanics 122	4		
Structural Design 124		2(4)	2(4)
Mechanics of Materials 125		3	5
Dynamos 184	3	4	
Electrical Laboratory 186	(4)	(4)	
Batteries 188			2
Blacksmithing 425	(4)		
Machine Work 430			(8)
Graphics 431		4	
Military Instruction	1(4)	1(4)	1(4)
.....			
.....			
.....			

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Analytics 402	5		
Calculus 403		5	4
Mechanics and Sound 200, 203	3(4)		
Electricity and Magnetism 201, 204		3(4)	
Heat and Light 202, 205			3(4)
Composition 231	1(2)	1(2)	1(2)
Public Speaking 222	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Chemistry 81	2(6)		
Surveying 121	(4)	4	2(4)
Descriptive Geometry 424	(4)	3(4)	2(2)
Steam Engines 428			3
Military Instruction	1(4)	1(4)	1(4)
Senior Year.			
English 226	(2)	(2)	1
Political Economy 142	4	4	4
Soil Physics 22	2(4)	2(4)	
Grain Judging 25		(2)	
Vegetable Culture 280		2(4)	1(4)
Farm Forestry 320			2(4)
Practical Problems 127	(4)		
Concrete 129	4		
Hydraulics 130	4		
Highways 133			5
Electric Lighting 192	2		
Telephones and Telegraphs 194, 195		2(2)	
Farm Machinery 437	2(4)		
Hydromechanics 438		4	
Design of Farm Structures 439		2(4)*	2(4)*
Farm Machinery Design 440		2(4)*	2(4)*
Heating and Ventilation 442			2(4)
Military Instruction	1(4)	1(4)	1(4)

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

ENGINEERING EDUCATION COURSE.

A substantial demand for teachers of the Manual Arts who have had a broad training in engineering, has led to the establishment of this Course. In addition to the instruction in engineering, a thorough training in pedagogy is offered. Since the need for such

teachers is felt in urban and in rural communities, some opportunity is given the student when he enters the Senior Class, to select those subjects in engineering which will best fit him for the solution of the problems of the community in which he wishes to practice his profession.

Engineering Education Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Trigonometry 400	5	2	
Algebra 401		3	
Analytics 402			5
English 220	4(2)	4(2)	4(2)
History 160	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Chemistry 80		4(2)	4(2)
Freehand Drawing 420	(4)		
Mechanical Drawing 421	(4)	(4)	(4)
Technical Instruction 422	2		
Woodwork 423	(6)	(4)	(4)
Military Instruction	1(4)	1(4)	1(4)
Junior Year.			
Calculus 403	5		
Advanced Composition 223	1(2)	1(2)	1
Public Speaking 224	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141			3
Psychology 1	4(2)		
History of Education 2		4	
Principles of Education 3			4
Mechanics 122	4		
Mechanics of Materials 125		3	5
Surveying 126			2(4)
Electrical Laboratory 186	(4)	(4)	
Blacksmithing 425		(4)	
Machine Design 429	1(4)	2(4)	3(4)
Graphics 431		4	
Experimental Engineering 432			(4)
Military Instruction	1(4)	1(4)	1(4)
Sophomore Year.			
Analytics 402	5		
Calculus 403		5	4
Mechanics and Sound 200, 203	3(4)		
Electricity and Magnetism 201, 204		3(4)	
Heat and Light 202, 205			3(4)
Composition 221	1(2)	1(2)	1(2)
Public Speaking 222	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Chemistry 81	2(6)		
Electricity 180, 181		3(2)	3(2)
Descriptive Geometry 424	(4)	3(4)	2(2)
Blacksmithing 425	(4)		
Steam Engines 428			3
Military Instruction	1(4)	1(4)	1(4)
Senior Year.			
English 226	(2)	(2)	1
Political Economy 142	4	4	4
Secondary Education 4	3(2)	2	
Organization and Materials 5		3(2)	
Practical Problems 127	(4)	(4)	
Farm Drainage 128	(4)		
Concrete 129	4*		
Hydraulics 130	4		
Estimates of Costs 131		1(4)	
Highways 133			5*
Electric Lighting 192	2	2	
Telephones and Telegraphs 194, 195		2(2)	2(2)
Machine Work 430	(4)	(4)	(4)
Experimental Engineering 432			(4)
Structural Design 433	2(4)*		
Farm Machinery 437	2(4)*		
Hydromechanics 438		4	
Heating and Ventilation 442			2(4)
School Architecture 443			3(4)*
Advanced Patterns 444			(8)
Military Instruction	1(4)	1(4)	1(4)

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

SHORT WINTER COURSES IN ENGINEERING.

These courses are offered to those who for various reasons cannot attend the four year courses. They are thoroughly practical in their nature and exceedingly helpful when full advantage is taken of the instruction given. Folders giving the details of these courses will be sent upon request. The following short courses will be given in 1917:

One week's Course on the Building and Maintenance of Roads.

One week's Course on Farm Machinery and Motors.

One week's Course on Farm Carpentry, Blacksmithing, Pipe Fitting, and the Use of Concrete on the Farm.

SUB-COLLEGIATE COURSE.

The work in this Course is designed to prepare students for the Freshman Class who have been unable to obtain elsewhere a complete course in a High School.

Sub-Collegiate Course.

Sub-Freshman Year.				Sub-Freshman Year.			
Subject.	Term.			Subject.	Term.		
	I	II	III		I	II	III
Algebra 405	4	4	4	History 164	3**	3**	3**
Plane Geometry 406	4	4		Latin 342	3**	3**	3**
Solid Geometry 407			4‡	German 363	4(1)*	4(1)*	4(1)*
Farm Arithmetic 408			4‡	French 383	4(1)*	4(1)*	4(1)*
Physics 206	4(1)	4(1)	4(1)	Physical Culture	(2)	(2)	(2)
English 231	4(2)	4(2)	4(2)	Military Instruction	(4)	(4)	(4)

*Alternative.

‡Solid Geometry must be taken by students preparing for Engineering Courses. Farm Arithmetic must be taken by students preparing for Agricultural and Horticultural Courses. Elective for other students.

GENERAL INFORMATION.

ADMISSION TO COLLEGE

GENERAL STATEMENT.

A candidate for admission to the College must present, together with his Scholastic Record, a certificate of good moral character; and if the candidate be from another school or college, the certificate must show that he left such institution in good standing.

METHOD OF ADMISSION.

There are two methods of gaining admission to the Freshman Class:

(1.) By Certificate.—The College will accept certificates from approved high schools of Maryland and the District of Columbia, and from accredited academies and preparatory schools of this State and other States. The certificates presented by the candidate must be officially certified by the principal of the school attended and must state in detail the work completed by the candidate.

Blank certificates conveniently arranged for the desired data will be sent upon application.

All admissions by certificates are regarded as merely provisional. That is, while a student presenting a proper certificate is admitted to such standing as it shows him entitled to, he may be required to take a special examination or to do special work in any subject in which his preparation proves to be unsatisfactory; or if, after a fair trial, he fails to maintain a standing in the class to which he was admitted, he may be dropped to a lower class.

(2.) By Examination.—Candidates not admitted by certificate will be required to stand written examinations upon the entrance subjects. These examinations will be held for 1916 on June 7th and 8th, and September 12th and 13th.

UNITS REQUIRED FOR ADMISSION.

A unit designates not less than four or five "periods" of classroom work of eight or ten "periods" of laboratory work per week, continued throughout the school year, each "period" being not less than forty minutes.

An applicant for admission to the Freshman Class must offer credit for fifteen (15) units of high school or other secondary school work. The units covering the fundamental subjects are specifically designated. The others may be selected from the tabulated list of electives.

A deficiency of three units will be allowed a candidate as conditions, but such conditions must be removed by the end of the Scholastic Year in which the candidate is admitted.

Distribution of the Fifteen (15) Units to be Offered in 1916 for Admission to the Several Courses.

AGRONOMY, ANIMAL HUSBANDRY, AGRICULTURAL EDUCATION, OR HORTICULTURE.		BIOLOGY, CHEMISTRY, CANNING, OR GENERAL SCIENCE.		CIVIL ENGINEERING, ELECTRICAL ENGINEERING, MECHANICAL ENGINEERING, RURAL ENGINEERING, OR ENGINEERING EDUCATION.	
SUBJECT.	VALUE IN UNITS.	SUBJECT.	VALUE IN UNITS.	SUBJECT.	VALUE IN UNITS
Algebra	1½	Algebra	1½	Algebra	1½
Plane Geometry	1	Plane Geometry	1	Plane Geometry	1
English	3	English	3	Solid Geometry or Plane Trigonometry	½**
History	2	History	2	English	3
				History	2
Foreign Language or Agriculture	2	French or German	2	French or German	2
Physics (With Notes)	1	Physics (With Notes)	1	Physics (With Notes)	1
Electives from Tabulated list	4½*	Electives from Tabulated list	4½*	Electives from Tabulated list	4

* Students electing Latin in Freshman Class must offer two (2) units in Latin.
**It is preferred that Solid Geometry rather than Plane Trigonometry be offered.

The high schools of the State are primarily local institutions in which the curricula must be adapted to the needs of their respective communities. Therefore, in the correlation of their courses of study with the College Entrance Requirements, it has been necessary to permit prospective students to make a selection of a limited number of credits from the given list of electives.

List of Elective Units.

Group.	Subject.	Value of Subject In Units.	Maximum Number of Units to be Selected from Any Group.
Mathematics	Solid Geometry	½	1
	Plane Trigonometry	½	
	Farm Accounts	½	
History	Ancient	1	2
	European	1	
	General	1*	
	English	1	
	American	1**	
ForeignLanguage	Latin	1 to 2	3
	French	1 to 2	
	German	1 to 2	
	Spanish	1 to 2	
Science	Chemistry (with notes)	1	4
	Agricul ure	½ to 2	
	Botany	½	
	Zoology	½	
	Physiology	½	
	Physical Geography	½	
	Geology	½	
Industrial Subjects	Freehand Drawing	½ to 1	2
	Mechanical Drawing	½ to 1	
	Shop Work	½ to 1	

* Not to be offered in addition to Ancient and European History.

**May be offered if taken in latter half of high school course.

SUGGESTIONS FOR PREPARATION IN THE REQUIRED SUBJECTS.

MATHEMATICS.

Algebra to Quadratics. (One unit.) As treated in the algebras of Wells, Wentworth, Tanner, Fine, or an equivalent. The four fundamental operations; factoring; highest common factor and least common multiple; fractions (including their conception as ratios) and complex fractions; powers and roots; the solution of linear equations, both numerical and literal, and of problems depending on linear equations; radicals and the theory of exponents; and the solution of simple second degree equations in one unknown quantity by factoring.

Algebra from Quadratics. (One-half unit.) As treated in the algebras of Wells, Wentworth, Tanner, Fine, or an equivalent. Equations with one or more unknown quantities, to be solved by the methods of linear or quadratic equations; ratio, proportion and variation; variables and limits; properties of series, including the

binomial theorem for positive integral exponents, and the formulas for the nth term and sum of the terms of arithmetical and geometrical progressions with applications; logarithms.

PLANE GEOMETRY. (One unit.) As treated by Wentworth, McMahon, Phillips and Fisher, or an equivalent. The usual theorems and constructions, including the general properties of plane rectilinear figures, the circle and measurement of angles, similar polygons, areas, regular polygons and the measurement of the circle; the solution of original exercises, including loci problems; and the application to the mensuration of lines and plane surfaces. The student should be able to prove every statement made, going back step by step until it rests upon primary definitions or axioms.

SOLID GEOMETRY. (One-half unit.) As treated in Wentworth's or an equivalent text-book. In addition to the discussion of general theorems, special attention should be paid to the solution of problems.

PLANE TRIGONOMETRY. (One-half unit.) This course should cover the field of plane trigonometry as given in Wentworth's or an equivalent text-book. It should include the solution of right and oblique triangles and special emphasis should be placed on the solution of practical problems, trigonometric identities, and trigonometric equations.

FARM ACCOUNTS. (One-half unit.) This course should extend over one-half year and treat of bookkeeping as it relates to farm life.

ENGLISH.

Preparation in English has two main objects: (1), command of correct and clear English, spoken and written; (2), power to read with intelligence and appreciation.

To secure the first end, training in grammar and the simple principles of rhetoric and the writing of frequent compositions are essential. The candidate must be able to spell, capitalize and punctuate correctly. He must show a practical knowledge of the essentials of English grammar, including ordinary grammatical terminology, inflection, syntax, the use of phrases and clauses; a thorough training in the construction of the sentence; and familiarity with the simpler principles of paragraph division and structure.

To secure the second end the candidate is required to read the works named below under A and B. The list is intended to give the candidate the opportunity of reading, under intelligent direction, a number of important pieces of literature.

ENGLISH A. For reading and practice. (One and one-half units.) The candidate should read the works prescribed below with a view to understanding and enjoying them. He will be expected to show a reasonable degree of familiarity with their substance, and will be required to have a general knowledge of the History of English and American Literature.

For students entering in 1916: Shakespeare's "Merchant of Venice," "As You Like It," and "Julius Caesar"; Addison's "Sir Roger de Coverley Papers"; Scott's "Ivanhoe"; Goldsmith's "Vicar of Wakefield"; Irving's "Sketch Book"; Macaulay's "Lays of Ancient Rome"; Longefellow's "Evangeline"; Lowell's "Vision of Sir Launfal"; Poe's "Raven"; Eliot's "Silas Marner"; Gray's "Elegy Written in a Country Churchyard"; and such other texts as are prescribed by the State Board of Education in the course of study for the high schools of Maryland.

ENGLISH B. For study and practice. (One and one-half units.) The candidate should read the books presented below with the view of acquiring such knowledge of their contents as will enable him to answer specific questions with accuracy and some detail. The examination is not designed, however, to require minute drill in difficulties of verbal expression, unimportant allusions and technical details.

For students entering in 1916: Shakespeare's "Macbeth"; Milton's "L'Allegro," "Il Penseroso," and "Comus"; Macaulay's Essay on Johnson or Addison, or Carlyle's Essay on Burns; Washington's Farewell Address and Webster's First Bunker Hill Oration or Burke's Speech on Conciliation with America.

HISTORY.

ANCIENT HISTORY TO 300 A. D. (One unit.) If a single textbook is used, it should be West's Ancient World, Wolfson's Essentials in Ancient History, Morey's Outlines of Ancient History, or an equivalent.

European History, 476 A. D. to 1648 A. D. (One unit.) Robinson's History of Western Europe or an equivalent. European History from the Fall of Rome to the end of the Thirty Years' War.

General History. (One unit.) Myer's, Fischer's or Colby's General History, or an equivalent.

English History. (One unit.) Cheyney's A Short History of England, Andrew's History of England, Walker's Essentials in English History, Montgomery's English History, or an equivalent.

American History. (One unit.) Channing's Student's History of the United States, McLaughlin's History of the American Nation, Hart's Essentials in American History, or an equivalent. The discovery, exploration and settlement of America; the colonial policy of England, culminating in the Revolution; the political, economic and social history of the United States since the adoption of the Constitution.

The entrance examinations in History will be so framed as to require comparison and the use of the judgment, rather than the mere use of the memory.

FOREIGN LANGUAGE.

Latin. First Year. (One unit.) First Latin Book completed.

Second Year. (One unit.) Three Books of Caesar, or an equivalent.

Forms and constructions needed in texts from Standard Latin Grammar. Prose based on texts.

French. First Year. (One unit.) Aldrich and Foster's Foundations of French and French Reader, or their equivalents.

Second Year. (One unit.) Reading of four to five hundred pages of graduated texts.

German. First Year. (One unit.) Bacon's German Grammar, or an equivalent.

Second Year. (One unit.) Reading of about 300 pages of graduated texts.

Spanish. First Year. (One unit.) Elementary grammar; reading about 100 pages of easy prose; simple composition and dictation.

Second Year. (One unit.) Reading of about 300 pages of graduated texts.

PHYSICS. (One unit.) As much as is contained in the text-books of Carhart and Chute, Hall and Bergen, Gage's Elements of Physics, Avery's Elements of Natural Philosophy, or an equivalent. Note books covering laboratory work, etc., must be submitted.

CHEMISTRY. (One unit.) Preparation should include the study of at least one standard text-book, to the end that the pupil may gain a comprehensive and connected view of the most important facts of elementary chemistry. The subjects should be attempted only in schools which possess an adequate equipment; laboratory work is essential and original notes must be submitted; more importance will attach to descriptive chemistry than to analytical, and the student should become as familiar as possible with the commonest non-metals and metals, as well as their simpler compounds.

AGRICULTURE. (One-half to three units.) Courses in Agriculture should include class, laboratory, and field work in Soils and Fertilizers, Farm Crops, Farm Animals, and Horticulture. A special text should be used in the treatment of each subject.

BOTANY. (One-half unit.) As much as is contained in Gray's Lessons, Bailey's Elementary Botany, Bergen's Foundations, or an equivalent.

ZOOLOGY. (One-half unit.) The preparation in Zoology should include a general knowledge of common animals of the locality with regard to their ecological relations; the general study of the animal forms such as the Amoeba, a ciliate, an earth worm, insect, frog and mammal. He should have some work in the general physiology of these types and a comparison of life processes in animals and plants. The student should have such general knowledge of the animal kingdom the characteristics of the Phyla and principal classes of animals as is given in Davison's Practical Zoology.

PHYSIOLOGY. (One-half unit.) The preparation should include the general facts of the anatomy, histology and physiology of the human body and the essentials of hygiene. A text-book, such as the first part of Hough and Sedgwick's The Human Mechanism, or an equivalent should be used in connection with charts and models.

PHYSICAL GEOGRAPHY. (One-half unit.) A study of the earth, atmosphere, waters and attendant phenomena; the distribution of

both animal and vegetable life, and the various industries resulting from the development of the natural resources of the earth.

Text-books on Physical Geography by Gilbert, Davis, Fairbanks, Tarr, or an equivalent.

GEOLOGY. (One-half unit.) The student must show a knowledge of geology as treated in Scott's Introduction to Geology or an equivalent. Notes covering laboratory and field work must be submitted.

INDUSTRIAL SUBJECTS.

SHOPWORK. (One-half to one unit.) A candidate who offers shopwork as an entrance subject is asked to present a detailed statement from his instructor, setting forth the kind and amount of work done.

DRAWING. (One-half to one unit.) A candidate must present a detailed statement from his instructor showing the kind and amount of work done and submit drawings done by himself.

ADMISSION TO OTHER CLASSES.

APPLICANTS FOR ADVANCED STANDING in any course, in addition to satisfying the requirements for admission to the Freshman Class, must pass an examination in the studies which have been pursued by the class for which they are candidates. Work done at a standard college is accepted when properly certified and found on examination to be equivalent in extent and quality to that required at this College.

EXAMINATIONS FOR ADMISSION TO ANY HIGHER CLASS will be held at the College in June and September at the same times as examinations for admission to the Freshman Class.

CANDIDATES FOR THE TWO-YEAR COURSE IN AGRICULTURE must be at least 16 years of age. They are also required to present certificates or pass examinations in subjects which are at least equivalent to those given in the seventh grade of the Maryland Public Schools.

CANDIDATES FOR THE SUB-FRESHMAN CLASS will be required to present certificates or to pass examinations in subjects as follows: Algebra as far as quadratics; two years of high school English or

its equivalent, and four units in other subjects taught in the Maryland High Schools which are not given in the Sub-Freshman Class.

Students from newly acquired territory or any foreign country must have a local guardian appointed with parental powers, with whom the President can deal in any case of emergency. Students who cannot speak English are not desired, and are advised that satisfactory progress at this College on their part cannot be achieved until they have familiarized themselves partly, at least, with the English language.

EXAMINATIONS AND PROMOTIONS.

In order to pass from one class to the next higher, a student is required to pass an examination in each study pursued, by a mark of at least sixty per cent., and to have a combined mark in each branch (daily and examination) of at least seventy per cent.

A student will not be promoted if it is manifest that he cannot pursue successfully the advanced work.

REPORTS.

Detailed reports are sent to parents and guardians at the end of every quarter. These give the grade of the student in every branch of study, his attendance record and his conduct record with comment by the President upon each item.

In addition to this, monthly reports are issued for October, November, January, February and April. These give general information as to scholarship, conduct, attendance and health, and call attention to deficiency in any one of these particulars.

GRADUATION AND DEGREES.

Degrees are granted by the Board of Trustees upon the recommendation of the Faculty.

All applications for degrees must be approved by the Faculty.

BACHELOR OF SCIENCE.

As a requisite for graduation the candidate for this degree must have completed the work previously outlined.

The subject for a thesis must be approved prior to February 1st, by the head of the department in which the investigation is to be pursued, and the thesis must be submitted not later than May 15th.

MASTER OF SCIENCE.

The degree of Master of Science may be conferred as follows:

1. Upon persons who have taken the degree of Bachelor of Science in a recognized institution, and have pursued successfully at this College for one year a course of graduate study, satisfying the following requirements:

The course shall consist of a major subject and two minor subjects germane to the major subject and shall be approved by the professor in charge of the major subject.

At least one minor subject shall be in a different department from the major subject.

The course shall occupy not less than fifteen credit periods per term.

Not fewer than five credit periods per term shall be devoted to the minor subjects.

A thesis satisfactory to the professor in charge of the major subject shall be presented.

2. Upon college graduates of not less than two years' standing, who are employed in any of the departments of the College, including the Experiment Station, and who have completed the equivalent of the above course of study. Candidates under this clause must have their applications approved at least eighteen months before they contemplate receiving their degree.

3. Upon graduates of this College of not less than three years' standing, who having been connected with institutions of learning or research, where adequate facilities for advanced work are available, have completed a course equivalent to (1) and have presented a satisfactory thesis.

MECHANICAL ENGINEER.

The degree of Mechanical Engineer may be conferred as follows:

1. Upon graduates of this College of not less than three years' standing, who having been connected with institutions of learning or research, where adequate facilities for advanced work are available, have completed a course consisting of a major and two minor subjects, and presented a satisfactory thesis. The course of study shall be outlined by the heads of the Departments of Civil, Electrical and Mechanical Engineering.

2. Upon graduates of this College who have had three years' professional experience of an acceptable character. Such candidates must present a full report of such experience and such other information as to the qualifiations for the degree as may be found desirable, and in addition shall present a satisfactory thesis.

3. All candidates must be at least Junior members of the American Society of Mechanical Engineers. All applications for degrees must be approved twelve months prior to the date they contemplate receiving the degree, and the thesis must be presented at least one month prior to such date.

CIVIL ENGINEER.

The degree of Civil Engineer may be conferred upon any candidate who is a graduate of this College with the degree of Bachelor of Science in Civil Engineering, and has been engaged in engineering pursuits for not less than three years since graduation, provided:

1. That he shall be at least a Junior member of the American Society of Civil Engineers, or that he shall have been in responsible charge of work for at least two years.

2. That he shall accompany his application with a synopsis of the work upon which he bases his request.

3. That the Committee composed of the heads of the Civil, Electrical and Mechanical Engineering Departments, to whom his application shall be referred, shall consider him eligible.

4. That previous to receiving the degree he shall comply with such further conditions as the aforesaid committee shall impose.

ELECTRICAL ENGINEER.

The degree of Electrical Engineer may be conferred upon any candidate who is a graduate of this College with the degree of Bachelor of Science in Electrical Engineering, and has been engaged in engineering work for not less than three years after graduation, provided:

1. That he shall be at least an Associate Member of the American Institute of Electrical Engineers.
2. That his application be approved twelve months prior to the date he shall receive the degree.
3. That he shall present a satisfactory thesis.
4. That he shall present with his application a complete report of his engineering experience and an outline of his thesis.
5. That the Committee composed of the heads of the Civil, Electrical, and Mechanical Engineering Departments, to whom the application shall be referred, shall consider him eligible.

SCHOLARSHIPS.

High-School Scholarships.— To encourage *worthy young men* who desire a Collegiate Education, the Board of Trustees has established for each High School in Maryland and the District of Columbia, one scholarship *each year,** to be awarded under the following conditions:

1.—The person awarded a scholarship must be a graduate of a high school and qualified to enter the Freshman Class (See Entrance Requirements, page 114), and must be of approved moral character and at least 15 years of age.

2.—The appointment to a scholarship shall be made by the School Superintendent, upon the recommendation and certification of the Principal of the High School.

The Principal of the High School may recommend one or more persons for appointment, with information as to the merits of each case. In making appointments, not only class standing, but inabil-

*This plan will be gradually put into effect as the present scholarships become vacant.

ity to meet the financial expenses of an education should be given consideration.

3.—The appointment shall be made for the term normally required to complete the course selected.

4.—Each scholarship has the value of $50.00 per year. This amount will be credited on the holder's account.

5.—The scholarship will be forfeited by persistent indifference to scholastic work or by repeated disregard of the rules of discipline of the College.

6.—The scholarship will be forfeited in case the holder fails of promotion at the end of any scholastic year, unless there are extenuating circumstances.

Preparatory School Scholarships. There has also been established one scholarship *each year* for graduates of each Preparatory School in Maryland and the District of Columbia in which the standard is of such a character as to qualify the appointee for entrance to the Freshman Class. The conditions governing these scholarships are the same as for the High Schools except that the appointment shall be made by the Principal of the Preparatory School.

County Scholarships.—Counties which do not have a high school will be given one $50.00 scholarship each year, and the recipient may enter the Sub-Freshman class (See Entrance Requirements, page 120). The appointment to the scholarship is made by the County Superintendent after a competitive examination. In other respects the regulations governing this scholarship are the same as for the high-school scholarships.

Industrial Scholarships. For the encouragement of *worthy young men* of limited means towards getting a College education, a limited number of industrial scholarships have been established by the Board of Trustees to be awarded under the following conditions:

1.—The number of scholarships will depend upon the amount of service required.

2.—The value of the scholarship will be graduated according to the amount and character of the work performed, and will range

from $40.00 per year upwards. The amount earned will be credited on the holder's account.

3.—The holder of such a scholarship will be required to render to the College certain specified services, such as work in the dining-room, on the corridors, in the library, etc.

4.—Such services will not as a rule prevent the holder from participating in military drill.

5.—Vacancies as they occur shall be filled by the President of the College and ratified by the Executive Committee of the Board of Trustees.

6.—The holder of an industrial scholarship: (a)—must be more than 15 years of age and of normal size, health and strength; (b)—must be of approved moral character as attested by some well-known resident of his locality; (c)—must be qualified to enter the Freshman Class of the College (See Entrance Requirements, page 120).

7.—The scholarship will be forfeited by persistent indifference to scholastic work or by repeated disregard of the rules of discipline of the College.

8.—The scholarship will be forfeited in case the services required of the holder are not satisfactory to those in charge of the work.

FACILITIES FOR RELIGIOUS WORSHIP.

The College is undenominational in character. The daily exercises of the College include religious worship in the College Chapel.

Students are encouraged to attend the church of their choice on Sunday mornings. There is an Episcopal church at College Park; and at Berwyn, one mile north, and at Riverdale, one mile south, are Presbyterian churches. In Hyattsville, two miles south, may be found Catholic, Episcopal, Presbyterian, Baptist and Methodist churches. In the city of Washington are churches of all denominations, and students may attend service in this city on Sunday mornings. Parents are urged to insist upon their sons attending the church of the faith of their parents.

COLLEGE REGULATIONS.

The attention of parents is earnestly called to the following rules in force at this College: The College authorities can succeed in conferring the maximum amount of training upon the student only with and by the active support and earnest co-operation of the parent. The President of the College is always ready and willing to discuss with parent or guardian any failures in a student's record, and correspondence on this subject is always appreciated.

No student will be accepted as a matriculate until the contract card containing the following agreement for matriculation is signed by parent or guardian, and received by the President of the College.

It is understood that the President of the College as the executive of the same, and acting for the Board of Trustees, a party to this contract, *has the right to ask the withdrawal of a student at any time, when in his judgment such withdrawal may be necessary either for the interest of the young man or the institution which he attends. It is further understood that a parent or guardian can at any time withdraw his son or ward, subject to regulations herein set forth.*

A student manifesting indifference to the observance of the rules and regulations of the institution, or wanting in proper attention to the preparation of his work, will be cautioned to improve. Failing to do so his parents, upon notice given by the President, must withdraw their son.

A special pledge to refrain from what is popularly known as *"hazing,"* and taking unfair means in examinations is required of every applicant for entrance, before he will be allowed to matriculate. Parents should impress upon their sons that failure to live up to this pledge is a dishonor which unfits them to be longer students of the College. *"Hazing" is invariably punished by instant dismissal.*

Frequent absences from the College are invariably of great disadvantage to the student, in breaking in upon the continuity of his work and in distracting his mind from the main purpose of his attendance at the institution. Parents are therefore earnestly asked to refrain from granting frequent requests to leave the College.

Students will not be permitted to leave classes to answer telephone calls, unless they are urgent.

Students will not be permitted to make contracts or to sell any article to their associates without the approval of the President.

The College will not be responsible for articles left in the dormitories during vacation, nor for valuables left by students in their rooms at any time. They should be deposited with the College Treasurer, who will place them in the College safe and give a receipt therefor.

RULES ON COLLEGIATE ROUTINE, ENDORSED BY THE FACULTY.

1. A student may not change his course of study unless at the written request of his parent or guardian, and after said request has been endorsed by the head of the course abandoned, and the head of the course requested, and approved by the Committee on Courses.

2. Examinations to make up conditions acquired in any term will be given only on the mornings and afternoons of certain Saturdays in the following term set apart for this purpose, and at such dates as shall be provided for entrance examinations at the beginning of the scholastic year. On these dates students having conditions will be expected to take the examinations as scheduled and will be permitted to do so without the payment of a fee. Should, for any reason, an examination be requested at any other time, a charge of $1.00 will be made for each subject on which the applicant is examined, provided that all such special examinations shall be authorized by the faculty.

3. To attain proficiency a student must make an examination grade of 60 per cent.; also a term average of 70 per cent. In case of failure, upon re-examination a grade of 70 per cent. is required.

4. A credit period is one theoretical or two practical periods per week for one term.

5. A student may not be promoted if conditioned in more than one-fifth of the credit periods required for one year's work, provided that no student may be promoted with more than one condition in any one department.

6. A student may not be promoted if he has any conditions of more than a year outstanding.

7. Any student who uses unfair means in examination will render himself liable to dismissal.

8. A student is subject to an oral examination at any time within ten days after a written examination.

9. An examination paper, containing erasures or showing alterations, may be rejected at the discretion of the Professor in charge, and a new examination ordered.

10. In computing term averages the daily grade is computed at 2, and the examination grade at 1.

11. The yearly averages in all studies is computed by giving each subject a weight according to the mean number of periods per week involved; theoretical periods being given a value of 2, practical periods 1.

12. Senior students must submit subjects for graduating theses prior to February 1st, and all theses for graduation must be completed prior to May 15th.

13. No special courses are permitted save by consent of the Committee on Courses. In case consent is granted for a special course, the certificate awarded attesting work will not have the College seal nor the signature of the Chairman of the Board.

EXPENSES.

SUMMARY. The details concerning the items of expense incurred by a student attending the College will be found in the paragraphs immediately following the tabulated summary. Although the cost of board and lodging for students living outside of the College Dormitories is not given, it should not vary in any marked degree from the amount shown. Extravagance is discouraged, but no attempt is made to stipulate the amount which should be allowed for incidental personal expenses. It is suggested, however, that for members of the lower classes in particular the weekly allowance for spending money at College be no greater than it is at home. Certain fees which do not apply to all students, such as the Diploma fee, have been omitted from the summary.

SUMMARY OF EXPENSES.
(For students entering in September.)

ITEM.	COST.			
	First Term.	Second Term.	Third Term.	Total.
Fixed Charges	$18.00	$16.00	$16.00	$50.00
Laboratory Fee*	4.00	4.00	4.00	12.00
Damage Fee †	5.00			5.00
	27.00	20.00	20.00	67.00
Uniform (Complete)‡	26.50			26.50
	53.50	20.00	20.00	93.50
Board, Lodging and Laundry	75.00	60.00	55.00	190.00
Total	$128.50	$80.00	$75.00	$283.50

*Not charged to students in the Sub-Freshman Class.
†Unexpended portion refunded at end of year.
‡As a rule students do not find it necessary to purchase a complete new outfit each year.

FIXED CHARGES.—Tuition is free. There are, however, the following fixed charges which must be paid by each student:

ITEM.	COST.
Incidentals.—A part payment toward janitor service; heating and lighting recitation and public rooms, laboratories and library; medical attention; etc	$30.00
Physical Culture, Gymnasium and Athletics	10.00
Book Rental	10.00
Total	$50.00

The charges are payable in advance as follows: $18.00 on entrance, $16.00 at the beginning of the second term, and $16.00 at the beginning of the third term.

Laboratory Fee.—A charge is made against each student in the four year and two year Courses for outfit, material used, and ordinary wear and tear in the courses involving work in the laboratory, shop, or field. As this fee is small and generally covers only in part the actual outlay, no portion of it will be returned. An extra charge will be made for excessive use of material or destruction of apparatus, etc. The total amount of this fee is $12.00 per year or $4.00 per term.

This fee for each term must be paid in advance and no student will be allowed to take a course in the laboratory, shop, or field until it is paid.

Damage or Caution Money.—A deposit of $5.00 is required of all students at time of entrance as a guarantee against damage to property. Unused damage money is returned to the student at the end of the year.

Uniform.—Instruction in military tactics is prescribed in the "Land Grant" Act of 1862. Students are required to appear in uniform at all military formations. This uniform is made of the best quality of Charlottesville gray cloth. It is furnished, under a special contract, at a very low price. The cost of each article and the total cost is as follows:

ITEM.	COST.
One (1) gray fatigue blouse	$8.50
Two (2) pair gray fatigue trousers	11.00
Two (2) gray shirts	4.00
One (1) gray fatigue cap	1.50
One (1) pair canvas leggins	0.80
One (1) harness leather belt	0.50
One (1) black four-in-hand tie	0.20
Total	$26.50

If the uniform is given careful usage, it will not be necessary to purchase a complete new outfit each year.

Measures for this uniform are taken as soon as the student arrives at the College and fit is guaranteed.

A deposit of at least 25 per cent. for this uniform must be made with the Treasurer when the measure is taken, as no uniforms will be ordered until the money has been deposited for the same. The uniform must be paid for in full before it is delivered. No uniform is paid for until it is approved by the Professor of Military Science and Tactics.

Diploma.—A fee of $5.00 will be collected for each Diploma issued in Course.

Certificate.—A fee of $3.00 will be collected for each Certificate issued to students who have completed the two-year Course.

Dormitory, Dining Hall and Laundry. Students who are assigned rooms in the College Dormitories and board in the College Dining Hall are charged as follows:

ITEM.	COST.
Room and furniture rent	$35.00
Board, $4.00 per week or for College year (36 weeks)*	140.00
Laundry, $0.50 per week or for College year (36 weeks)	15.00
Total	$190.00

*If meals are served during any College recess an extra charge will be made for them.

Payments on this account are to be made as follows: $75.00 on entrance, $60.00 at the beginning of the second term, and $55.00 at the beginning of the third term.

Any student who has not paid for his room, board, and laundry within five (5) days after the date upon which payment is due will be required to give up his room in the dormitory and will be excluded from the dining hall until payment is made.

Additional Information.—A deposit of $10.00 is required of each student desiring to reserve a room in one of the College Dormitories. Room reservations will be made on and after June 1st of each year until all the available rooms are taken. Unless special arrangements are made all reservations will be canceled on the opening day in September. The deposit of $10.00 which normally will be credited to the account of the student, will be forfeited if he fails to report in September. No special room may be reserved, as all of them afford approximately the same comfort

and convenience. An effort is made, however, to comply with the desire of the student making a reservation in so far as the conditions will permit. Other things being equal, old students are given the preference in the assignment of rooms.

Students entering College after November 1st or withdrawing prior to the close of the Scholastic Year will be required to pay for the time they are in attendance during the incomplete term as follows:

The rate of fixed charges is $7.00 per month.

The rate for room, board, and laundry is $25.00 per month.

All other charges are as previously indicated.

Students withdrawing more than two weeks after entrance will be charged for at least one month's attendance.

Students withdrawing less than two weeks after entrance will be charged at the rate of $2.00 per day.

Students rooming outside may obtain board and laundry from the College at the same rates as those living in the College Dormitories.

Day students may get lunch at noon at the lunch counter at nominal prices.

Charges against students are continued until formal withdrawal has been made.

No student will be promoted to another class, and no diploma will be conferred upon, nor any certificate issued to a student who is in arrears in his account with the College.

In cases of illness, requiring a special nurse and medical attention, the expenses must be borne by the student.

Students will be admitted free of cost to membership in College Athletic Association.

All College property in the possession of the individual student, such as his room, furniture, books, apparatus and military equipment, will be charged against him, and the parent or guardian must assume responsibility for its return without abuse to the proper department at the end of each scholastic year, at which time the account will be cancelled. If abused, the cost of replacing or repairing the abused articles must be paid by the parent or guardian.

Damage to College property in public places in the building and on the grounds by the student will be charged to the whole student body, pro rata, unless the offender is known. In such cases, the whole expense of repairing or replacing the damaged property will be charged to the parent or guardian of the offending party. The matriculation of a student is evidence of the acceptance of this regulation.

All students assigned to Dormitories are required to provide themselves with the following articles, to be brought from home or purchased on arrival:

1 pair blankets (for single bed, 3 ft.x6 ft.).
2 pairs sheets (for single bed).
4 pillow cases.
6 towels.
8 table napkins.
1 pillow.
2 clothes bags.
1 broom.
1 dust pan.

ACKNOWLEDGMENTS.

MEDALS.—The authorities of the Institution take this opportunity to express their appreciation of the courtesy of their friends in establishing the following, for competition:

William Pinkney Whyte Medal, for excellence in Oratory, offered by Hon. Isaac Lobe Straus, of Baltimore, Md.

Winfield Scott Schley prize, for excellence in Oratory, offered by B. H. Warner, Esq., of Kensington, Md.

James Douglas Goddard Memorial Medal, to student of Prince George's county making the highest average in studies, offered by his sister, Mrs. Annie K. Goddard James, of Washington, D. C.

A Silver Cup, to the Literary Society winning the inter-Society Debate, offered by Dr. H. J. Patterson, of College Park, Md.

STUDENT ORGANIZATIONS.

Students' clubs for religious, social, literary and athletic purposes are encouraged as a means of creating class and college pride, and developing an *esprit de corps* among the students. Each class has its own organization, in which matters relating to the class are discussed and directed. Officers are elected and the unity of the class preserved. This has been found to be a decided aid to discipline and tends to raise the standard of student honor.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

Much encouraging work has been done by this organization during the past year, and gratifying interest has been shown in the meetings.

OFFICERS.

President, H. B. Derrick.
Vice-President, E. A. Taylor.
Recorder, K. E. Smith.
Treasurer, R. S. Dearstyne.

LITERARY SOCIETIES.

These societies are invaluable adjuncts to college work. Through them a knowledge of parliamentary law is gained, as well as a readiness of expression and activity in thought, qualities particularly valuable to the American citizen.

The literary society work is under the general supervision of the Professor of Public Speaking, who is always ready to advise with the members in matters of parliamentary law and train them in the delivery of their orations and debates.

POE SOCIETY.

President, R. McHenry.
Vice-President, L. E. Bopst.
Secretary, G. M. Merrill.
Treasurer, G. B. Gray.
Critic, E. A. Taylor.

NEW MERCER SOCIETY.

President, K. E. Smith.
Vice-President, W. J. Aitcheson.
Secretary-Treasurer, D. J. Howard.
Critic, J. C. Sterling.

ENGINEERING SOCIETY.

One of the newest and most beneficial additions to M. S. C. A. is the Engineering Society. Organized in September, 1912, it proved an immediate success, gratifying a long-felt and much-needed want on the part of the engineering students. The general object of the Society is the cultivation of a more active interest in engineering work, while its special aim is to give the student the opportunity to discuss the line of work in which he is interested and to become more accustomed to presenting his ideas. Inasmuch as the Society takes in all members of the Senior and Junior Classes in the Civil, Electrical and Mechanical Engineering Courses, a larger opportunity for acquiring technical knowledge outside of one's own course is offered.

The Society meets twice a month. Papers are presented at alternate meetings by Engineers in practice and by the students themselves.

OFFICERS.

President, G. B. D. Gray.
Vice-President, E. R. Hindman.
Secretary-Treasurer, A. V. Williams.

THE LIEBIG CHEMICAL SOCIETY.

The Liebig Chemical Society was organized to satisfy a much-felt need. The object of the Society is to have the various chemical problems of the day, discussed by men who have specialized in the different branches of Chemistry, or by the members themselves. This tends to develop a keener interest in Chemistry, and also to broaden the student along Chemical lines.

Membership in this Society is open to all members of the Sophomore, Junior and Senior Classes, who are specializing in Chemistry.

OFFICERS.

President, K. T. Knode.
Vice-President, J. D. Bowling, Jr.
Secretary-Treasurer, C. G. Donovan.

AGRICULTURAL CLUB.

OFFICERS.

President, W. J. Aitcheson.
Vice-President, P. H. Morris.
Secretary, R. C. Towles.
Treasurer, E. G. Knatz.

ROSSBOURG CLUB.

The social man is a necessity—hence this organization is encouraged and supported by the President and Faculty. The entertainments have been marked by a spirit which emphasizes the wisdom of its organization and justifies its encouragement.

OFFICERS.

President, P. H. Morris.
Vice-President, J. C. Sterling.
Secretary, J. Bradley.
Treasurer, G. B. D. Gray.

REVEILLE.

The "Reveille" is the College annual, edited entirely by the Senior Class. Eighteen editions of the "Reveille" have appeared and each has been characterized by a gratifying improvement in the standard both of originality and expression.

EDITORIAL STAFF.

Editor-in-Chief, R. C. Towles.
Associate Editors, J. C. Sterling, K. Smith, H. A. Reisinger, K. Grace, W. A. Brockwell, R. White, F. G. Lodge.
Business manager, B. A. Ford.
Assistant Business Managers, G. B. D. Gray, E. A. Taylor.
Treasurer, W. J. Aitcheson.

M. S. C. A. WEEKLY.

The "M. S. C. A. Weekly" is the College newspaper, and is published every week during the scholastic year.

EDITORIAL STAFF.

Editor-in-Chief, J. C. Sterling.
Local Editor, H. R. Shoemaker.
Athletic Editor, H. B. Derrick.
Assistant Local Editors, C. H. Fuchs, H. Smith.
Sophomore Editors, G. M. Merrill, F. D. Day, W. K. Grigg.
Cartoonist, K. Smith.
Columnist, H. F. Ungar.
Business Manager, C. G. Donovan.
Assistant Business Managers, G. F. Epply, A. V. Williams.

ATHLETIC ASSOCIATION.

The Athletic Association is an organization composed of the student body, with membership open to the Alumni Association, the Faculty, and Board of Trustees. It is an incorporated body with a governing board of seven. The object of the Association is the promotion of athletics in general, the supervision of all athletic exercises and sports, and the development of athletic and College spirit. The management of the Association is vested in a board of seven, on which are: the Director of Athletics; two members of the Alumni Association (elected at the annual meeting of that body); two members of the Faculty, appointed by the

President of the College, and two members of the student body, elected at an annual meeting of the Athletic Association. The officers of the Association are students. Eligibility of students for membership on teams in intercollegiate competition is determined on a very strict basis in the By-Laws.

OFFICERS.

President, K. Grace.
Secretary, H. Smith.

ATHLETIC COUNCIL.

The Athletic Council, in conjunction with the Student Athletic Association, manages all athletic affairs. It consists of seven members of the Faculty, appointed by the President, and five students, namely, the managers of the football, baseball, track and tennis teams, and the President of the Athletic Association.

THE ORATORICAL ASSOCIATION OF MARYLAND COLLEGES.

The Maryland State College of Agriculture is a member of this Association, which is composed of St. John's College, Washington College, Western Maryland College and Maryland State College of Agriculture. Contests are held annually at these colleges in rotation, and a marked improvement is to be observed as a result of its organization.

BOARD OF PROCTORS.

This Board consists of a limited number of Senior students who have charge of the students in dormitory and on the campus. They adjust all minor matters of discipline, grant temporary leaves of absence, inspect student quarters and are responsible for the general order and physical condition of the dormitories.

PROCTOR STAFF.

Chief Proctor, J. C. Sterling.
Associate Proctors, R. McHenry, G. B. D. Gray, E. A. Taylor.

STUDENTS' CONFERENCE COMMITTEE.

This Committee is composed of a certain number of representatives from each class and a number of the members of the Faculty. The object of this Committee is to establish a definite relationship between the Faculty and the student body.

COUNTY CLUBS.

These Clubs are formed for the purpose of bringing together students from the same County to discuss the affairs of the County. From these Clubs the students acquire valuable knowledge concerning their home County.

THE ALUMNI ASSOCIATION.

An Institution can largely be judged by the character of its Alumni. Their success in life is the Institution's pride. The work of the Alumni of a College is its greatest asset. M. S. C. A. is fortunate in having among its Alumni, men who have attained notable achievements in Agriculture, Engineering and Science. M. S. C. A. Alumni can be found holding prominent positions in all walks of life.

While for many years the Alumni, through their Association, have taken an active interest in the growth and development of the Institution, it is pleasing to state that this interest has been greatly increased during the past two or three years and since the recent great fire at the College, the Association has taken active steps to aid the Board of Trustees and Faculty in the rehabilitation of the College.

One of the cherished hopes of the Association, that of having direct representation on the Board of Trustees, has been attained in the appointment of two members of the Alumni Association, by the Governor of the State, as Trustees of the College. The attainment of this end will naturally greatly increase the enthusiasm and interest of the members of the Association in co-operating more closely than ever with the College authorities in increasing the scope and usefulness of the Institution.

The Alumni Association continues to offer a medal to the debating societies.

The members have also greatly aided in the development of athletics and especially in conducting the joint athletic meets, which were held at the College during the last four years.

The Alumni also co-operate in the publishing of the "M. S. C. A. Weekly."

The officers of the Alumni Association for the present year are: President, R. M. Pindell, '89; Vice-President, F. P. Veitch, '91; Secretary-Treasurer, W. M. Hillegeist, '12; Executive Committee, members at large, W. W. Skinner, '95; W. D. Graff, '00; Alumni Athletic Board, Wellstood White, '05; J. P. Grason, '09.

Graduates and members of the Association are requested to keep the Secretary-Treasurer, W. M. Hillegeist, College Park, Md., informed of any change in address. Any information concerning the older graduates which will enable the officers to locate and communicate with them will facilitate their efforts and will tend to further the success of the Association.

DEGREES CONFERRED JUNE 16th, 1915.

Honorary.

MASTER OF SCIENCE IN HORTICULTURE.

THOMAS H. WHITE, COLLEGE PARK, MD.

MASTER IN MECHANICAL ENGINEERING.

HOWARD L. CRISP, COLLEGE PARK, MD.

In Course.

ELECTRICAL ENGINEER.

WALTER A. FURST, BALTIMORE, MD.

BACHELOR OF SCIENCE.

AGRICULTURAL EDUCATION.

PINCKNEY ALBERT HAUVER, FREDERICK COUNTY, MD.

AGRICULTURE.

LEONIDAS D. ANDRIOPOULOS, WASHINGTON, D. C.
RUDOLPH STOCKDALE BROWN, WASHINGTON COUNTY, MD.
CHRISTIAN HOWARD BUCHWALD, BALTIMORE, MD.
OSCAR GEORGE CARPENTER, CALVERT COUNTY, MD.
J. HARRY KNODE, WASHINGTON COUNTY, MD.
MICHAEL LEVIN, BALTIMORE, MD.
A. B. XEROCOSTAS, ERIE, PA.

HORTICULTURE.

THOMAS DAVIS GRAY, CHARLES COUNTY, MD.
R. J. MCCUTCHEON, FREDERICK COUNTY, MD.
EDGAR W. MONTELL, BALTIMORE COUNTY, MD.
RALPH PHELPS WEST, WASHINGTON, D. C.

BIOLOGY.

MAX KISLIUK, JR., WASHINGTON, D. C.

CHEMISTRY.

GLENN SPEELMAN FRAZEE, ALLEGANY COUNTY, MD.
ARTHUR MCCORD GIBSON, BALTIMORE, MD.
WILLIAM EUGENE HALL, BALTIMORE, MD.
PHILIP NORMAN PETER, MONTGOMERY COUNTY, MD.
HENRY A. RASMUSSEN, BALTIMORE, MD.
MARTIN EMANUEL ROHN, BALTIMORE, MD.
JOHN JAMES TULL, SOMERSET COUNTY, MD.

CIVIL ENGINEERING.

JOSEPH PAUL BLUNDON, PRINCE GEORGE COUNTY, MD.
J. EDWIN BOWLAND, SOMERSET COUNTY, MD.
WILLIAM ROUSE KELLY, BALTIMORE, MD.
WILLIAM TURNER PERKINS, PRINCE GEORGE COUNTY, MD.
EVERETT HUMES PIERSON, WASHINGTON, D. C.
CHARLES EDWARD ROBINSON, FRANKTOWN, VA.
EDGAR MCCORMICK ROBERTS, PHILADELPHIA, PA.

ELECTRICAL ENGINEERING.

ADRIAN ROLAND CARTER, ANNE ARUNDEL COUNTY, MD.
HEDLEY ARTHUR CLARK, BALTIMORE COUNTY, MD.
WILLIAM EMMITT HARRISON, BALTIMORE COUNTY, MD.
ROBERT NAIRNE TODD, WICOMICO COUNTY, MD.

MECHANICAL ENGINEERING.

CHARLES THOMAS COCKEY, BALTIMORE COUNTY, MD.
RICHARD DALE, SOMERSET COUNTY, MD.
AUGUSTINE HERMAN MASSEY, KENT COUNTY, MD.
LEE ROBERTS PENNINGTON, HARFORD COUNTY, MD.
VICTOR POWER PENNINGTON, KENT COUNTY, MD.
FREDERICK WILLIAM WRIGHT, MONTGOMERY COUNTY, MD.

CERTIFICATES IN THE TWO-YEAR COURSE IN AGRICULTURE.

PERCIVAL HAMAR BEAVERS, RICHMOND, VA.
DOUGLAS GILPIN, MONTGOMERY COUNTY, MD.
HEINRICH WILHELM HEERMAN, WESTFALEN, GERMANY.
WILLIAM EDWARD JARRELL, CAROLINE COUNTY, MD.
MARTIN JOSEPH LALLY, MORRISTOWN, N. J.
TUFTON BENTLEY MASON, ACCOTINK, VA.
NICHOLAS SNOWDEN STABLER, MONTGOMERY COUNTY, MD.

Testimonials of Merit Awarded June 16, 1915.

For distinguished achievement in the promotion of the agricultural interests of Maryland:

ORLANDO HARRISON, WORCESTER COUNTY, MD.
For his efforts in promoting Horticulture.

HENRY H. PIERSON, JR., TALBOT COUNTY, MD.
For his efforts in promoting Animal Industry.

JOHN H. DRURY, CALVERT COUNTY, MD.
For his efforts in promoting Tobacco Industry.

Medals and Prizes Awarded June 16, 1915.

For excellence in the Agricultural Education Course; offered by the College:

P. A. HAUVER, FREDERICK COUNTY, MD.

For excellence in the Animal Husbandry Course; offered by the College:

J. H. KNODE, WASHINGTON COUNTY, MD.

For excellence in the Horticultural Course; offered by the College:

E. W. MONTELL, BALTIMORE COUNTY, MD.

Honorable Mention.

R. J. MCCUTCHEON, FREDERICK COUNTY, MD.

For excellence in the Chemical Course; offered by the College:

P. N. PETER, MONTGOMERY COUNTY, MD.

Honorable Mention.

W. E. HALL, BALTIMORE, MD.

For excellence in the Electrical Engineering Course; offered by the College:

W. E. HARRISON, BALTIMORE COUNTY, MD.

For excellence in the Mechanical Engineering Course; offered by the College:

F. W. WRIGHT, MONTGOMERY COUNTY, MD.

For excellence in the Two-Year Course in Agriculture; offered by the College:

N. S. STABLER, MONTGOMERY COUNTY, MD.

Honorable Mention.

T. B. MASON, ACCOTINK, VA.

For excellence in Debate; offered by the Alumni Association:

RALPH MCHENRY, FREDERICK COUNTY, MD.

The Goddard Medal, for excellence in Scholarship and moral Character; offered by Mrs. Annie K. Goddard James:

ROBERT WHITE, PRINCE GEORGE COUNTY, MD.

The William Pinkney Whyte Medal, for excellence in Oratory; offered by Isaac Lobe Straus, Esq.:

J. C. STERLING, SOMERSET COUNTY, MD.

CADET BATTALION ORGANIZATION.

BATTALION STAFF.

F. J. McKenna.....Major.
J. B. Gray.....First Lieutenant and Adjutant.
J. Bradley.....Second Lieutenant and Quartermaster.
B. F. Senart.....Sergeant Major.

BAND OFFICERS AND NON-COMMISSIONED OFFICERS.

J. B. Gray.....Adjutant, Commanding.
L. C. Wilson.....Second Lieutenant and Chief Musician.
H. Smith.....Drum Major.
L. Burritt.....Sergeant.
J. Donnett.....Sergeant.
C. H. Fuchs.....Sergeant.
A. H. Sellman.....Sergeant.
P. E. Clark.....Corporal.
P. Barton.....Corporal.

COMPANY OFFICERS AND NON-COMMISSIONED OFFICERS.

Company "A."	Company "B."	Company "C."
	CAPTAINS.	
R. McHenry.	R. H. Morris.	K. E. Smith.
	FIRST LIEUTENANTS.	
L. E. Bopst.	E. A. Taylor.	W. Aitcheson.
	SECOND LIEUTENANTS.	
W. McLean.	J. F. Sunstone.	R. White.
	FIRST SERGEANTS.	
J. A. Bromley.	H. H. Balkam.	G. M. Sturgis.
	QUARTERMASTER SERGEANTS.	
Company "A."	Company "B."	Company "C."
I. Coggins.	F. A. Korff.	H. W. Fristoe.
	SERGEANTS.	
H. B. Derrick.	J. E. Mills.	R. D. Watson.
C. G. Donovan.	W. D. Gray.	A. V. Williams.
W. Kishpaugh.	W. A. Gemeny.	D. J. Howard.
	CORPORALS.	
L. M. Childs.	F. B. Rakemann.	C. H. Bacon.
E. B. McKinley.	M. A. Thorne.	F. M. Haig.
W. P. Williams.	M. A. Pyle.	C. S. Elliott.
P. V. Horn.	C. J. Fuhrman.	M. D. Engle.
B. S. Tongue.	E. L. Wilde.	H. Ward.
G. F. Eppley.	W. H. Carrol.	R. France.
	FIELD MUSICIANS.	
C. E. Johnson.	A. D. Etienne.	J. E. Dingman.
J. Stevens.	F. J. Frere.	J. A. Gray.

ROSTER OF MATRICULATES.

SESSION 1915-16.

NAME.	POST OFFICE.	COUNTY.
GRADUATE STUDENTS.		
ALLEN, H. H.,	Baltimore,	*Baltimore City.*
ANSPON, B. W.,	College Park,	Prince George.
DRAKE, HARLEY B.,	Washington,	*District of Columbia.*
GRAHAM, J. J. T.,	Hyattsville,	Prince George.
HAYMAN, E. T.,	Baltimore,	*Baltimore City.*
LINHARDT, C. L.	Baltimore,	*Baltimore City.*
MONROE, J. F.,	Snow Hill,	Worcester.
SHAW, S. B.,	College Park,	Prince George.
SENIOR CLASS.		
AITCHESON, W. J.,	Burtonsville,	Montgomery.
BAINS, R. S.,	Washington,	*District of Columbia.*
BOPST, L. E.,	Frederick,	Frederick.
BOWLING, J. D., JR.,	Upper Marlboro,	Prince George.
BRADLEY, J.,	Lonaconing,	Allegany.
BROCKWELL, W. A.,	Washington,	*District of Columbia.*
BURLINGAME, L. E.,	Washington,	*District of Columbia.*
DAY, S. E.,	Baltimore,	*Baltimore City.*
ERDMAN, L. E.,	Baltimore,	*Baltimore City.*
FORD, B. A.,	Baltimore,	*Baltimore City.*
GRACE, K.,	Easton,	Talbot.
GRAY, G. B. D.,	Prince Frederick,	Calvert.
GRIFFIN, S. E.,	Highland,	Howard.
HINDMAN, E. R.,	Port Deposit,	Cecil.
KNODE, K. T.,	Martinsburg,	*West Virginia.*
KNATZ, E. G.,	Owings Mills,	Baltimore.
LODGE, F. G.,	McConnellsburg,	*Pennsylvania.*
MCHENRY, R.,	Frederick,	Frederick.
MCKENNA, F. J.,	Woonsocket,	*Rhode Island.*
MCLEAN, W.,	Baltimore,	*Baltimore City.*
MORRIS, P. H.,	Faulkner,	Charles.
REISINGER, J. A.,	Rockville,	Montgomery.
SANDO, C. E.,	Washington,	*District of Columbia.*
SMITH, K. E.,	Washington,	*District of Columbia.*
STEINMETZ, F. J.,	Baltimore,	*Baltimore City.*
STERLING, J. C.,	Crisfield,	Somerset.
SUNSTONE, J. T.,	Baltimore,	*Baltimore City.*
TAYLOR, E. A.,	Stockton,	Worcester.
TOWLES, R. C.,	College Park,	Prince George.
WHITE, R.,	College Park,	Prince George.
WILSON, L. C.,	Nottingham,	*Pennsylvania.*

NAME.	POST OFFICE.	COUNTY.
	JUNIOR CLASS.	
BALKAM, H. H.,	Washington,	*District of Columbia.*
BROMLEY, J. A.,	Stockton,	Worcester.
BURRITT, L.,	Washington,	*District of Columbia.*
COGGINS, I.,	Washington,	*District of Columbia.*
DEARSTYNE, R. S.,	Port Chester,	*New York.*
DERRICK, H. B.,	Takoma Park,	Montgomery.
DONNET, J.,	Baltimore,	*Baltimore City.*
DONOVAN, C. G.,	Washington,	*District of Columbia.*
DUBEL, B.,	Baltimore,	*Baltimore City.*
FRISTOE, H. W.,	Baltimore,	*Baltimore City.*
FUCHS, C. H.,	Port Chester,	*New York.*
GEMENY, W. A.,	Bozman,	Talbot.
GILPIN, W. F.,	Lanham,	Prince George.
GRAY, W. D.,	Prince Frederick,	Calvert.
HASLUP, L. H.,	Annapolis Junction,	Howard.
HOWARD, D. J.,	Brookeville,	Montgomery.
KISHPAUGH, W. M.,	Harrisburg,	*Pennsylvania.*
KORFF, F. A.,	Baltimore,	*Baltimore City.*
LARSEN, C. L.,	Long Island,	*New York.*
NASH, P. M.,	Washington,	*District of Columbia.*
OBERLIN, L. D.,	Silver Spring,	Montgomery.
RUFF, S. W.,	Roslyn,	Baltimore.
SELLMAN, A. H.,	Washington,	*District of Columbia.*
SENART, B. F.,	Washington,	*District of Columbia.*
SHOEMAKER, H. R.,	Ashton,	Montgomery.
SMITH, H.,	Arlington,	Baltimore.
STURGIS, G. M.,	Hyattsville,	Prince George.
TARBUTTON, C. C.,	Crumpton,	Queen Anne.
THOMSEN, F. L.,	Hyattsville,	Prince George.
WATSON, R. D.,	Welcome,	Charles.
WILLIAMS, A. V.,	Nanticoke,	Wicomico.
WINANT, H. B.,	Washington,	*District of Columbia.*
	SOPHOMORE CLASS.	
ARTHUR, R. W.,	Havre de Grace,	Harford.
BACON, C. H.,	Silver Spring,	Montgomery.
BARRETT, W. D.,	Baltimore,	*Baltimore City.*
BARTON, P.,	Washington,	*District of Columbia.*
BOONE, A. W.,	Philadelphia,	*Pennsylvania.*
BRIMER, F. C.,	Stockton,	Worcester.
CARROLL, W. H.,	Baltimore,	*Baltimore City.*
CHILDS, L. M.,	Highland,	Howard.
CLARK, P. E.,	La Plata,	Charles.
CONRAD, R. C.,	Winston-Salem,	*North Carolina.*
COPPAGE, H. S.,	Church Hill,	Queen Anne.
CUTLER, W. V.,	Washington,	*District of Columbia.*
DAVISON, B.,	Washington,	*District of Columbia.*
DAY, F. D.,	Boyds,	Montgomery.
DIETERICH, J. F., Jr.,	Baltimore,	*Baltimore City.*
DONOVAN, T. J.,	Beverly Farms,	*Massachusetts.*

NAME.	POST OFFICE.	COUNTY.
ELLIOTT, C. S.,	Hebron,	Wicomico.
ENGLE, M. D.,	Forest Glen,	Montgomery.
EPPLEY, G. F.,	Washington,	*District of Columbia.*
EYRE, R. S.,	Highland,	Howard.
EZEKIEL, M. J. B.,	Hyattsville,	Prince George.
FRANCE, R.,	Washington,	*District of Columbia.*
FREUNDLICH, H.,	Baltimore,	*Baltimore City.*
FUHRMAN, C. J.,	Brentwood,	Prince George.
GATES, H. B.,	Takoma Park,	Montgomery.
GILMOUR, L. J.,	Ogdensburg,	*New York.*
GRIGG, W. K.,	Port Chester,	*New York.*
HAIG, F. M.,	Riverdale,	Prince George.
HART, DEW. C.,	Riverdale,	Prince George.
HORN, P. V.,	Mt. Airy,	Carroll.
JONES, J. P.,	Davidsonville,	Anne Arundel.
KANN, R. S.,	Pittsburg,	*Pennsylvania.*
LONDON, O.,	New York,	*New York City.*
MCCOMAS, J. P.,	White Hall,	Baltimore.
MCKINLEY, E. B.,	Washington,	*District of Columbia.*
MANTZ, F. MCL.,	York,	*Pennsylvania.*
MERRILL, G. M.,	Crisfield,	Somerset.
POSEY, W. B.,	Anacostia,	*District of Columbia.*
PYLE, M. A.,	Baltimore,	*Baltimore City.*
QUINN, D. L.,	Crisfield,	Somerset.
RAKEMANN, F. B.,	Washington,	*District of Columbia.*
REMSBURG, J. E.,	Middletown,	Frederick.
RICH, M. N.,	Washington,	*District of Columbia.*
SANDO, W. J.,	Washington,	*District of Columbia.*
SIMPSON, E. O.,	Chance,	Somerset.
STUNTZ, R. G.,	Washington,	*District of Columbia.*
TERNENT, S. S.,	Lonaconing,	Allegany.
THORNE, M. A.,	Lanham,	Prince George.
TONGUE, B. S.,	Baltimore,	*Baltimore City.*
WEIGAND, P. E.,	Baltimore,	*Baltimore City.*
WILDE, E. L.,	Washington,	*District of Columbia.*
WILLIAMS, W. P.,	Doncaster,	Charles.

FRESHMAN CLASS.

AITCHESON, J. L.,	Burtonsville,	Montgomery.
AMIGO, J.,	Havana,	*Cuba.*
AXT, R. W.,	Baltimore,	*Baltimore City.*
BABCOCK, K. W.,	Hagerstown,	Washington.
BEACHAM, P. S.,	Westminster,	Carroll.
BERLIN, H.,	Baltimore,	*Baltimore City.*
BERRY, M. H.,	Upper Marlboro,	Prince George.
BLETSCH, C. F.,	Riverdale,	Prince George.
BOLGIANO, J. W.,	Towson,	Baltimore.
BRIMER, W. E.,	Snow Hill,	Worcester.
BROOKS, A. J.,	Port Chester,	*New York.*
BROWN, M. C.,	Baltimore,	*Baltimore City.*
BRYAN, A. W.,	Perth Amboy,	*New Jersey.*
BUELL, A. C.,	Washington,	*District of Columbia.*
BURNSIDE, B. L.,	Hyattsville,	Prince George.

NAME.	POST OFFICE.	COUNTY.
CHEN, C. C.,	Shanghai,	*China.*
CHICHESTER, F. S.,	Aquasco,	Prince George.
CHICHESTER, P. W.,	Aquasco,	Prince George.
CHIPMAN, J.,	Baltimore,	*Baltimore City.*
CLARK, G. S.,	Ellicott City,	Howard.
CLARK, J. B.,	Ellicott City,	Howard.
CLENDANIEL, G. W.,	Kennedyville,	Kent.
COCKEY, J. D.,	Lillington,	*North Carolina.*
COLE. K. C.,	Port Chester,	*New York.*
CONOVER, G. I.,	Port Chester,	*New York.*
CONYNGTON, J.	Washington,	*District of Columbia.*
CRUM, P. E.,	Harmony Grove,	Frederick.
DAWSON, F. A.,	Washington,	*District of Columbia.*
DORSEY, THOS. R.,	Mt. Rainier,	Prince George.
DOWIN, T. V.,	Williamsport,	Washington.
DRAWBAUGH, J. R.,	Washington,	*District of Columbia.*
DUNLAP, HELEN E.,	Wilmington,	*Delaware.*
DUVALL, W. H.,	Croome,	Prince George.
ETIENNE, A. D.,	Berwyn,	Prince George.
FARREN, E. E.,	Washington,	*District of Columbia.*
GLEASON, R. W.,	Washington,	*District of Columbia.*
GUTBERLET, I. W.,	Baltimore,	*Baltimore City.*
HAIG, R. V.,	Riverdale,	Prince George.
HAND, E. W.,	Berwyn,	Prince George.
HARDISTY, W. R.,	Seabrook,	Prince George.
HARP, D. R.,	Dayton,	Howard.
HART, R. G.,	Chicago,	*Illinois.*
HARVEY, E.,	Washington,	*District of Columbia.*
HICKS, W. P.,	Baltimore,	*Baltimore City.*
HILL, G. M.,	Port Chester,	*New York.*
HIPPLE, B. G., Jr.,	Marietta,	*Pennsylvania.*
HUNT, C., Jr.,	Washington,	*District of Columbia.*
JOHNSON, C. E.,	Brooklyn,	*New York.*
KEEFAUVER, J. E.,	Berwyn,	Prince George.
LATIMER, T. M.,	Hyattsville,	Prince George.
LAWSON, M. A.,	Crisfield,	Somerset.
LEWIS, R. R.,	Frederick,	Frederick.
McLEAN, D. L.,	Baltimore,	*Baltimore City.*
MEASDAY, W., Jr.,	Brooklyn,	*New York.*
MESS, R. W.,	Chevy Chase,	Montgomery.
MILLER, A. A.,	College Park,	Prince George.
MILLER, E. V.,	Hagerstown,	Washington.
MONTELL, H. G.,	Catonsville,	Baltimore.
MONTGOMERY, T.,	Riverdale,	Prince George.
MORNHINWEG, W. F., Jr.,	Port Chester,	*New York.*
MORTON, M. C.,	McConnellsburg,	*Pennsylvania.*
MURRELL, A. A.,	Baltimore,	*Baltimore City.*
NORRIS, G. W.,	Baltimore,	*Baltimore City.*
PAINE, C. E.,	Washington,	*District of Columbia.*
PERKINS, H. T.,	Springfield,	Prince George.
PERRIE, A. L.,	College Park,	Prince George.
PETTIT, G. E.,	Alexandria,	*Virginia.*
POSEY, K. C.,	La Plata,	Charles.
PRATT, A. N.,	Hackensack,	*New Jersey.*

NAME.	POST OFFICE.	COUNTY.
Reid, E. N.,	Welbourne,	Worcester.
Richmond, J. M.,	Baltimore,	*Baltimore City.*
Rocklin, H. L.,	Baltimore,	*Baltimore City.*
Royer, W. E.,	Washington,	*District of Columbia.*
Rust, A. D.,	Lanham,	Prince George.
Sawyer, E. M.,	Manila,	*Philippine Islands.*
Schein, L. L.,	New York,	*New York City.*
Sellman, R. L.,	Beltsville,	Prince George.
Sewell, M. D.,	Hyattsville,	Prince George.
Shumate, J. O.,	Washington,	*District of Columbia.*
Siegert, L. L., Jr.,	Galloways,	Anne Arundel.
Smith, C. R.,	Baltimore,	*Baltimore City.*
Smith, J. E.,	Galloways,	Anne Arundel.
Snyder, H. E.,	Keedysville,	Washington.
Speidel, F. C.,	Washington,	*District of Columbia.*
Stackhouse, W. R.,	Bridgeton,	*New Jersey.*
Starr, J. H.,	Westover,	Somerset.
Sturgis, H. L.,	Hyattsville,	Prince George.
Ungar, H. F.,	New York,	*New York City.*
Vandermast, G. H,.	Baltimore,	*Baltimore City.*
Van Schaick, F. E.,	Washington,	*District of Columbia.*
Vincent, J. M.,	Hyattsville,	Prince George.
Wallop, J. D.,	Princess Anne,	Somerset.
Warren, F. E.,	Washington,	*District of Columbia.*
West, E. G.,	Washington,	*District of Columbia.*
White, R. G.,	Oakland,	Garrett.
Wilkerson, D. C.,	Washington,	*District of Columbia.*
Zverina, F.,	Washington,	*District of Columbia.*

SUB-FRESHMAN CLASS.

Abbott, C. W.,	Baltimore,	*Baltimore City.*
Amigo, A.,	Havana,	*Cuba.*
Amigo, F.,	Havana,	*Cuba.*
Baurman, W. M.,	Washington,	*District of Columbia.*
Beavers, P. H.,	Richmond,	*Virginia.*
Benson, H. J.,	Lanham,	Prince George.
Bonneville, C. S.,	Snow Hill,	Worcester.
Bowling, E. N.,	Upper Marlboro,	Prince George.
Brooks, J. W.,	Madison,	Dorchester.
Clagett, J. H., Jr.,	Roslyn,	Baltimore.
Compton, R. K.. Jr.,	Baltimore,	*Baltimore City.*
Coney, W. B., Jr.,	Baltimore,	*Baltimore City.*
Cox, R. C.,	Huntingtown,	Calvert.
Diggs, A. C.,	Baltimore,	*Baltimore City.*
Dingman, J. E.,	Berwyn,	Prince George.
Druckerman, B.,	New York,	*New York City.*
Ezekiel, W. N.,	Hyattsville,	Prince George.
Freere, F. J.,	Tompkinsville,	Charles.
Freere, T. A.,	Tompkinsville,	Charles.
Gonzales, J. S.,	Bulacan,	*Philippine Islands.*
Goodwin, L. M.,	Brier Hill,	*New York.*
Gray, J. A.,	Brownsville,	Washington.
Grimm, W. H.,	Stanley,	*Virginia.*

NAME.	POST OFFICE.	COUNTY.
HALLAM, H.,	Baltimore,	*Baltimore City.*
HANCE, C. W.,	Mutual,	Calvert.
HEMPSTONE, W. D.,	Leesburg,	*Virginia.*
HOUSTON, T. T.,	Washington,	*District of Columbia.*
JOHNSON, J.,	Baltimore,	*Baltimore City.*
KNODE, J. S.,	Martinsburg,	*West Virginia.*
KNODE, R. T.,	Martinsburg,	*West Virginia.*
KRETSCHMAN, G. W.,	Elmira,	*New York.*
LAMBDIN, F. F.,	Annapolis,	Anne Arundel.
LANGRALL, J. H.,	Baltimore,	*Baltimore City.*
MALLERY, J. P.,	Lanham,	Prince George.
MATTHEWS, W. B.,	La Plata,	Charles.
MOORE, H. W.,	Denison,	*Texas.*
PYLE, C. T.,	Baltimore,	*Baltimore City.*
RANKIN, E. J.,	Rockville,	Montgomery.
RIGGS, M. T.,	Rockville,	Montgomery.
SMITH, H. L.,	Riverdale,	Prince George.
STRANGE, R. F.,	Annapolis,	Anne Arundel.
THORNTON, M. S.,	Crisfield,	Somerset.
TILGHMAN, S. P.,	Crisfield,	Somerset.
WENDELL, G. A.,	Baltimore,	*Baltimore City.*
WRIGHT, C. W.,	Cumberland,	Allegany.

SECOND YEAR AGRICULTURAL.

BEALL, S. W.,	Beltsville,	Prince George.
BINGHAM, L.,	Washington,	*District of Columbia.*
BOURNE, T. B.,	Baltimore,	*Baltimore City.*
BROWN, J. P.,	Centreville,	Queen Anne.
CLEMENTS, G.,	Millington,	Kent.
MCDONALD, H. M.,	Barton,	Allegany.
RUHL, C. C.,	Baltimore,	*Baltimore City.*
THOMPSON, E. W.,	Washington,	*District of Columbia.*
TREVVETTE, A. S.,	Richmond,	*Virginia.*
WARD, H. B.,	Baltimore,	*Baltimore City.*

SECOND YEAR HORTICULTURAL.

HUNGERFORD, R. A.,	Marshall Hall,	Charles.
LAPHAM, E. W.,	Goldsboro,	Caroline.
MILLS, J. E.,	Hyattsville,	Prince George.
TALIAFERRO, J. E.,	Ware Neck,	*Virginia.*
VAN HORN, J. W.,	Chicago,	*Illinois.*

FIRST YEAR AGRICULTURAL AND HORTICULTURAL.

BARRETT, A. J.,	Rome,	*Italy.*
BEALL, O. L.,	Beltsville,	Prince George.
BECKER, J. F.,	Washington,	*District of Columbia.*
BIBLE, H. F.,	Flintstone,	Allegany.
BOYD, A. J.,	Washington,	*District of Columbia.*
BOYER, R.,	Washington,	*District of Columbia.*
DANIELS, M. B.,	Hyattsville,	Prince George.
DAVIS, G. S.,	Staunton,	*Virginia.*

NAME.	POST OFFICE.	COUNTY.
FRAZEE, W. L.,	Old Town,	Allegany.
FULTON, J.,	Stewartstown,	*Pennsylvania.*
HARVEY, M. L.,	Lanham,	Prince George.
HOLLIDAY, K. B.,	Norfolk,	*Virginia.*
HOPKINS, O. W.,	Salisbury,	Wicomico.
McCORMICK, J. M.,	Bel Air,	Harford.
McPHERSON, R. D.,	Easton,	Talbot.
MANNING, R. L.,	Accokeek,	Prince George.
NICHOLS, W. E.,	Hinton,	*West Virginia.*
PYWELL, E.,	College Park,	Prince George.
STEVENS, J. W.,	Baltimore,	*Baltimore City.*
SWARTZ, J. M.,	Baltimore,	*Baltimore City.*
TRAIL, O.,	Easton,	Talbot.
TUTTLE, A. E.,	Rye,	*New York.*
WALSON, C. F.,	Washington,	*District of Columbia.*
WASNEY, J. S., Jr.,	Washington,	*District of Columbia.*
WAYBRIGHT, E. J.,	Littlestown,	*Pennsylvania.*
WILLSON, F. F.,	Silver Spring,	Montgomery.

UNCLASSIFIED.

GISRIEL, J. L.,	Baltimore,	*Baltimore City.*
HARRISON, H. L.,	Berlin,	Worcester.
HELMAN, C. E.,	Lurgan,	*Pennsylvania.*
HILLEGEIST, W. M.,	College Park,	Prince George.
LEGARE, S. K.,	Washington,	*District of Columbia.*
LODGE, W. C.,	Hyattsville,	Prince George.
ROBERTSON, J. R.,	La Plata,	Charles.
SHANK, H. S.,	Chicago,	*Illinois.*
SMOOT, L. R.,	Kensington,	Montgomery.
SPEER, T. T.,	Baltimore,	*Baltimore City.*
SPRINGS, L. P.,	Washington,	*District of Columbia.*
WALLS, H. R.,	Church Hill,	Queen Anne.

STUDENTS IN THE SUMMER SCHOOL.

AITCHESON, MARGUERITE,	Laurel,	Prince George.
ANGLE, LEAH,	Big Spring,	Washington.
BADEN, ARA,	Baden,	Prince George
BAINS, R. S.,	Washington,	*District of Columbia.*
BARCLAY, CLARA C.,	Riverdale,	Prince George.
BARNES, MARY E.,	La Plata,	Charles.
BEAVERS, P. H.,	College Park,	Prince George.
BENNETT, RUTH H.,	Washington,	*District of Columbia.*
BENSON, H. J.,	Lanham,	Prince George.
BLANDFORD, DAISY,	Clinton,	Prince George.
BLANDFORD. HELEN,	Piscataway,	Prince George.
BLUNDON, MARY A.,	Riverdale,	Prince George.
BOSWELL, RUTH,	Piscataway,	Prince George.
BOUNDS, MYRTLE,	Laurel,	Prince George.
BRANNOCK, MATTIE,	Cambridge,	Dorchester.
BROOKBANK, BERTHA R.,	Riceville,	Charles.
BURKINS, MARY C.,	Street,	Harford.
BURNER, FLORENCE H.,	Baltimore,	*Baltimore City.*

NAME.	POST OFFICE.	COUNTY.
CARR, EVA,	Waterbury,	Anne Arundel.
CARRICO, J. A.,	Clinton,	Prince George.
CHRISTENSEN, EDITH,	Berwyn,	Prince George.
CLINE, IDA,	Myersville,	Frederick.
COAD, CECELIA,	Brandywine,	Prince George.
COLLINS, SUSIE A.,	Germantown,	Montgomery.
COOKE, DOROTHY,	Cedarville,	Prince George.
COOPER, RITA,	Hancock,	Washington.
CORY, MRS. E. N.,	College Park,	Prince George.
CROSS, S. C.,	Washington,	*District of Columbia.*
CROWTHER, GRACE,	Laurel,	Prince George.
CULLER, MARY,	Frederick,	Frederick.
DAVIDSON, B.,	Riverdale,	Prince George.
DEAN, CARRIE M.,	Boonsboro,	Washington.
DE CORSE, EMMA E.,	Mechanicsville,	St. Mary.
DEENER, R.,	Weverton,	Washington.
DERR, LENA J.,	Frederick,	Frederick.
DERR, SUSIE S.,	Frederick,	Frederick.
DOBSON, ADA,	Hancock,	Washington.
DUCKETT, G. AUGUSTA,	Bladensburg,	Prince George.
ELDER, HELENA,	College Park,	Prince George.
ESTEY, W. W.,	Washington,	*District of Columbia.*
FORD, B. A.,	College Park,	Prince George.
GILLISS, MARY A. F.,	St. Martin's,	Worcester.
GISRIEL, J. L.,	Baltimore,	*Baltimore City.*
GONZALES, J.,	Bulacan,	*Philippine Islands.*
GRAY, J. E. C.,	Grayton,	Charles.
GRAY, T. D.,	La Plata,	Charles.
GRAY, VIRGINIA,	Riverdale,	Prince George.
GRIFFITH, J.,	Gaithersburg,	Montgomery.
GROCK, NELLIE,	Silver Spring,	Montgomery.
GUYTHER, CLAUDIA,	Piney Point,	St. Mary.
HALL, CLAUDIA,	Germantown,	Montgomery.
HALL, MARGARET,	Germantown,	Montgomery.
HAND, ETHEL,	Berwyn,	Prince George.
HANFORD, R. B.,	Riverdale,	Prince George.
HARDY, EVA,	Clinton,	Prince George.
HILL, ELIZABETH,	Hyattsville,	Prince George.
HILL, ELIZABETH,	Stockton,	Worcester.
HILL, REGINA,	Seat Pleasant,	Prince George.
HOLMES, GRACE,	Takoma Park,	*District of Columbia.*
HOOPES, BERTHA,	Hyattsville,	Prince George.
HOOPES, MARION,	Hyattsville,	Prince George.
HUMMER, I. RUTH,	Walkersville,	Frederick.
ICE, W.,	Mt. Rainier,	Prince George.
JONES, JENNIE W.,	Cambridge,	Dorchester.
JONES, L. T.,	Friendship,	Anne Arundel.
JUSTIS, DOROTHY,	College Park,	Prince George.
KARN, EDNA,	Brunswick,	Frederick.
KAUSE, SELMA,	Washington,	*District of Columbia.*
KEBLER, MABEL A.,	Washington,	*District of Columbia.*
KEBLER, V. L.,	Washington,	*District of Columbia.*
KERSHNER, SUSIE G.,	Williamsport,	Washington.
KINNAMAN, H. R.,	Myersville,	Frederick.
LAWRENCE, EULALIA,	Abels,	St. Mary.

NAME.	POST OFFICE.	COUNTY.
Le Savoy, N. A.,	Centerville,	Queen Anne.
Lewis, Ada B.,	Lander,	Frederick.
Long, Verda,	Boonsboro,	Washington.
Lowe, Mary W.,	Hyattsville,	Prince George.
MacDaniel, Rebekah,	Washington,	*District of Columbia.*
McAllister, Maude,	Vienna,	Dorchester.
McBrien, R. O.,	Riverdale,	Prince George.
McBrien, Ruth,	Riverdale,	Prince George.
McConkey, M.,	Washington,	*District of Columbia.*
McGarry, Winifred,	Seat Pleasant,	Prince George.
McKinley, E. B.,	College Park,	Prince George.
Martin, Grace,	Breathedsville,	Washington.
Martin, Pauline,	Northkeys,	Prince George.
Mayer, C. R.,	Frostburg,	Allegany.
Meredith, L. Kathleen,	Cambridge,	Dorchester.
Meyer, Helena,	Riverdale,	Prince George.
Meyer, Marguerite,	Riverdale,	Prince George.
Middleton, B.,	Clinton,	Prince George.
Moore, Addie,	Congress Heights,	Prince George.
Moreland, Fannie,	Gallant Green,	Charles.
Morris, Ida,	Salisbury,	Wicomico.
Mudd, M. Pauline,	Hyattsville,	Prince George.
Mullen, Vernon,	Walbrook,	Baltimore.
Murray, Ethel S.,	Smithsburg,	Washington.
Ogle, Blanche,	Hyattsville,	Prince George.
Padget, Marguerite,	Clinton,	Prince George.
Payne, Annie,	Stockton,	Worcester.
Phelps, Bertha,	Bowie,	Prince George.
Poffinberger, Ruth,	Lantz,	Frederick.
Preller, Mary,	Annapolis,	Anne Arundel.
Pryor, S.,	Smithsburg,	Washington.
Pywell, E. E.,	College Park,	Prince George.
Reed, Susan E.,	Germantown,	Montgomery.
Ritz, Louise,	Hancock,	Washington.
Routzahn, Mary C.,	Myersville,	Frederick.
Scaggs, Mildred,	Branchville,	Prince George.
Sellers, Margaret,	Vienna,	Dorchester.
Short, Myrtle R.,	Vienna,	Dorchester.
Sibley, Irene,	Germantown,	Montgomery.
Skelley, Florence,	Oldtown,	Allegany.
Smith, Kathryn M.,	Riverdale,	Prince George.
Smoot, L. R.,	College Park,	Prince George.
Snowden, Alice,	Riverdale,	Prince George.
Speer, T. T.,	Baltimore,	*Baltimore City.*
Spence, Virginia,	College Park,	Prince George.
Springs, L. P.,	Washington,	*District of Columbia.*
Stansbury, Mary H.,	Hampstead,	Carroll.
Suydam, E. G.,	Annapolis,	Anne Arundel.
Swomley, Carrie,	Monrovia,	Frederick.
Thomas, Ethlene,	Frederick,	Frederick.
Thomas, Gladys M.,	Boonsboro,	Washington.
Tighe, Lulu,	Laurel,	Prince George.
Tubman, Virginia,	Vienna,	Dorchester.
Underwood, Edith,	Accokeek,	Prince George.
Underwood, Margaret,	Accokeek,	Prince George.

NAME.	POST OFFICE.	COUNTY.
VAN SHAICK, F. E.,	Washington,	*District of Columbia.*
WALTER, LUCY J.,	Nanticoke,	Wicomico.
WARTHEN, A. E.,	Monrovia,	Montgomery.
WASHINGTON, EMMA,	Washington,	*District of Columbia.*
WEDMYER, LUCILLE,	Hancock,	Washington.
WELSH, C. E., Jr.,	Riverdale,	Prince George.
WHEATLEY, LILLIAN,	Clinton,	Prince George.
WILSON, ELLEN,	Westwood,	Prince George.
WOODWARD, BESSIE,	Gaithersburg,	Montgomery.
YEATMAN, MRS. F.,	Washington,	*District of Columbia.*

STUDENTS IN THE SHORT WINTER COURSES.

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*Part time.

LECTURERS, 1916-1917.

In addition to the special lecturers, members of the College faculty, Experiment Station staff, and Extension Service staff lectured during the courses on Domestic Science, Soils, Crops, Farm Live Stock and Dairying, Poultry, Horticulture, Farm Mechanics, and Good Roads.

SHORT WINTER COURSES.

BRAINARD, A. S., U. S. Office of Public Roads and Rural Engineering.
BRIGHAM, Dr. A. A., Commercial Poultryman, Brinklow, Md.
BROOKS, T. ROY, Farmer, Emmorton, Md.
CHICHESTER, PETER W., Aquasco, Md.
CLOSE, C. P., Horticulturist, U. S. Department of Agriculture.
GAMBLE, J. A., Dairy Division, U. S. Department of Agriculture.
HOLMES, MRS. WILLIAM, Washington, D. C.
JACOBS, MISS EMMA S., Director of Home Economics Teaching, Washington, D. C.
JAMES, E. W., U. S. Office of Public Roads and Rural Engineering.
LEE, A. R., Poultry Specialist, U. S. Department of Agriculture.
LYON, Dr. MARTHA M. BREWER, Washington, D. C.
MATTER, G. E., West Chester, Pa.
McKINNEY, F. W., Annex Improvement Commission, Baltimore, Md.
MILLIN, R. B., Bureau of Animal Industry, U. S. Department of Agriculture.
MOOREFIELD, C. H., U. S. Office of Public Roads and Rural Engineering.
OWENS, R. W., State Roads Commission, Baltimore, Md.
RICE, C. T., Oakton, Va
SANDO, W. J., Washington, D. C.
SCHMITZ, NICHOLAS, Agronomist, Pennsylvania Agricultural Experiment Station.
SCHNEPFE, F. E., Roads Engineer, Queen Anne County, Md.
SHIRLEY, H. G., State Roads Commission, Baltimore, Md.
SPRINGER, MRS. H. P., Garrett Park, Md.
TOBIN, J. J., U. S. Office of Public Roads and Rural Engineering.
VOORHEES, W. E., Good Roads Machinery Co., Kennett Square, Pa.

FARMERS' INSTITUTES.

GOVERNOR EMERSON HARRINGTON, Annapolis, Md.
ALFORD, G. H., U. S. Department of Agriculture.
BLACKFORD, FRANK, Eldorado, Ohio.
BROWN, GEORGE O., Baltimore, Md.
COLLIER, W. OSCAR, Easton, Md.
FRERE, WILLIAM J., Thompkinsville Md.
HARRY, D. GARFIELD, Pylesville, Md.
HILL, GEORGE A., Bridgeville, Del.
HILL, DR. I. W., U. S. Department of Agriculture.
HILL, RICHARD S., Director, College Park, Md.
ROEFER, C. M., Chicago, Ill.
STUART, WILLIAM, U. S. Department of Agriculture.

FACULTY COMMITTEES.

(The President is an Ex-officio Member of All Committees.)

ALUMNI: Messrs. Cory, Byrd, Warthen, Jarrell, Dennis, and Ruffner.

AMUSEMENTS, DANCES, ENTERTAINMENTS, LECTURES, STUDENT SOCIALS: Messrs. T. H. Taliaferro, Crisp, Broughton, Ortmayer, Bomberger, Cory, Anspon.

CATALOGUE: Messrs. T. H Taliaferro, Spence, Metzger, Broughton, and Cory.

COURSES OF STUDY: Messrs. McDonnell, Spence, W. T. L. Taliaferro, Bomberger, T. H. Taliaferro, and Metzger.

DISCIPLINE: Messrs. Spence, McDonnell, T. H. Taliaferro, Harrison, and Broughton.

LIBRARY: Messrs. Bomberger, W. T. L. Taliaferro, Gwinner, and Broughton.

PHYSICAL CULTURE AND ATHLETICS: Messrs. Byrd, Richardson, Everett, Griffith, Bomberger, Broughton, and Cory.

PUBLIC FUNCTIONS: Messrs. Harrison, W. T. L. Taliaferro, Gwinner, Everett, Anspon, Bomberger, and Richardson.

SANITATION: Messrs. Griffith, McDonnell, W. T. L. Taliaferro, and T. H. Taliaferro.

SCHEDULE: Messrs. Creese, McDonnell, Harrison, Cory, and Gwinner.

STUDENT ENROLLMENT, RECORDS, CLASS AND QUARTER ASSIGNMENTS: Messrs. Spence, Harrison, Richardson, Metzger, and T. H. Taliaferro.

STUDENT ORGANIZATIONS, LITERARY SOCIETIES, Y. M. C. A., GLEE CLUB, DRAMATIC ASSOCIATION: Messrs. Richardson, Creese, Ortmayer, Bruce, and W. T. L. Taliaferro.

STUDENT PUBLICATIONS: Messrs. Richardson, Metzger, Bomberger, and Cory.

STUDENT RELATIONS: Messrs. Bomberger, Darrow, Richardson, and Ruffner.

SUMMER SCHOOL: Messrs. Metzger, Bomberger, Crisp, Beckenstrater, and Ortmayer.

CALENDAR.

FIRST TERM.

Monday, September 17th, Tuesday, September 18th, and Wednesday, September 19th.—Entrance Examinations.
Thursday, September 20th, 1 P. M.—College Work Begins.
Thursday, November 29th.—Thanksgiving Recess.
Friday, December 21st, 12 M.—First Term Ends.
Friday, December 21st, 12 M., to Monday, January 7th, 8 A. M.—Christmas Recess.

SECOND TERM.

Monday, January 7th, 8 A. M.—Second Term Begins.
Monday, January 7th.—Special Winter Courses Begin.
Saturday, March 16th.—Second Term and Special Winter Courses End.

THIRD TERM.

Monday, March 18th.—Third Term Begins.
Wednesday, March 27th, Noon, to Wednesday, April 3rd, 8 A. M.—Easter Recess.
Wednesday, May 15th.—Submitting of Theses.
Thursday, May 30th.—Founders' and Farmers' Day.
Friday, May 31st.—Meeting of Trustees.
Sunday, June 2nd.—Baccalaureate Sermon.
Monday, June 3rd.—Class Day.
Tuesday, June 4th.—Alumni Day.
Wednesday, June 5th, 11 A. M.—Graduation Day Exercises.
Friday, June 7th.—Examinations for Promotion Begin.
Friday, June 14th.—Examinations for Promotion End.

1917

JULY

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MARYLAND STATE COLLEGE OF AGRICULTURE

HISTORY

"An act to establish and endow an agricultural college in the State of Maryland" was passed by the Legislature of the State in 1856, and is found in Chapter 97 of the Laws of Maryland for that year. The scope of this act of incorporation is shown by the preamble, which reads as follows:

> WHEREAS, It has been represented to the Legislature, that certain wise and virtuous citizens are desirous of instituting and establishing in some convenient locality within this State, an Agricultural College and Model Farm, in which the youthful student may especially be instructed in those arts and sciences indispensable to successful agricultural pursuits; and
>
> WHEREAS, It doth appear to this Legislature, that while the wise and learned in the present age hath cultivated with laudable industry, and applied with admirable success the arts and sciences to other pursuits, the most necessary, useful and honorable pursuits of agriculturists have so far been lamentably neglected; and
>
> WHEREAS, It is the province and duty of the Legislature to encourage and aid the philanthropic citizens in their efforts to disseminate useful knowledge by establishing an Agricultural College and Model Farm, which shall, in addition to the usual course of scholastic training, particularly indoctrinate the youth of Maryland, theoretically and practically, in those arts and sciences, which with good manners and morals, shall enable them to subdue the earth and elevate the State to the lofty position its advantages in soil, climate, etc., and the moral and mental capacities of its citizens, entitle it to attain.

This was the first effort in the Western Hemisphere to use scientific investigation for the advancement of the vocation of Agriculture, since at that time no other institution of a similar character existed in the United States. Under the charter thus granted to a party of public-spirited individuals, the original College building was erected, and its doors were opened to students in the fall of 1859.

For three years it was conducted as a private institution. In 1862, the Congress of the United States, recognizing the valuable work in the cause of practical education which such colleges could achieve for the country passed the "Land Grant Act." This Act granted each State and Territory which should claim its benefit a proportionate amount of unclaimed Western lands, in place of scrip, the proceeds from the sale of which should apply under

certain conditions to the "endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." This grant having been formally accepted by the General Assembly of Maryland, and the Maryland Agricultural College being named as the beneficiary of the grant, the College thus became, in part, at least, a State institution. In the Fall of 1914, the College became, wholly, a State institution.

During recent years the College has made a steady growth. This fact is evidenced by the increased number of students availing themselves of its facilities; by the erection of many new buildings—the library and gymnasium building, the chemical laboratory, Morrill Hall, the sanitarium, the engineering building, and Calvert Hall; as well as by the establishment of the Departments of Farmers' Institutes and Extension Work, and the State Departments of Chemistry (Fertilizer, Feed and Agricultural Lime Control), Horticulture, Entomology and Vegetable Pathology. As a consequence of its development under such favorable auspices the institution has become the most important factor in the agricultural and industrial development of the State.

The State Bureau of Forestry co-operates with the College, the Director being, by the terms of his appointment, Lecturer on Forestry at the College.

In 1916 the General Assembly granted a new charter to the College and changed its name from "The Maryland Agricultural College" to "The Maryland State College of Agriculture."

LOCATION AND DESCRIPTION.

The College is located in Prince George's county, Maryland, on the line of the Washington Branch of the B. & O. R. R. eight miles from Washington, and thirty-two miles from Baltimore. At least nine trains a day from each city stop at College Station, thus making the place easily accessible from all parts of the State. Telephone connection is made with the Chesapeake and Potomac lines.

The College grounds front on the Baltimore and Washington Boulevard. The suburban town of Hyattsville is two miles to the south, and Laurel, the largest town in the county, is ten miles to the north on the same road. Access to these towns and to Washington may be had by steam and electric railway. The site of the College is particularly beautiful. The buildings occupy the crest of a commanding hill, which is covered with forest trees, and overlooks the entire surrounding country. In front, extending to the Boulevard, is a broad, rolling campus, the drill ground and athletic field of the students. In the rear are the farm buildings and barn. A quarter of a mile to the northeast are the buildings of the Experiment Station. The College farm contains about three hundred acres, and is devoted to fields, gardens, orchards, vineyard, poultry yards, etc., used for experimental purposes and demonstration work in agriculture and horticulture.

The general appearance of the College grounds is exceedingly attractive. They are tastefully laid off in lawns and terraces which are ornamented with shrubbery and flower beds. The view from the grove and campus cannot be surpassed.

The location of the College is healthful; the sanitary conditions are excellent. No better proof of this can be given than that there has been practically no serious case of illness among the students for many years.

COLLEGE BUILDINGS.

The original College building completed in 1859, and the administration building completed in 1904, and connected with the former by a covered bridge, were completely destroyed by fire on the night of November 29, 1912. A temporary assembly hall, kitchen and dining hall have been erected and are now in use. Living rooms for a part of the students are available in Calvert Hall, the dormitory constructed in 1914, and in several houses on the College campus.

In 1894 the building used as the library was erected. It is well-lighted and commodious.

The Departments of Civil, Electrical and Mechanical Engineering and the Departments of Physics and of Mathematics are located in the two-story brick building erected in 1896, the brick annex,

erected in 1904, and the brick addition constructed in 1909. This latter, which consists of a main building four stories in height and a wing three stories in height, is so arranged as to form with the buildings previously erected a concrete whole. In this group of buildings are found laboratories of various kinds, wood and machine shops, a forge room and foundry, drawing rooms, blue print rooms, instrument rooms, lecture rooms, offices, a library room, lavatories, lockers, etc. The equipment is modern in every respect and the facilities for work in the above named departments have been greatly increased.

The chemical building was completed in 1897, and is now thoroughly equipped. It contains several lecture rooms and laboratories for practical work and the analysis of fertilizers, feeding materials for domestic animals, and agricultural lime. This work is assigned by Acts of the General Assembly to the Professor of Chemistry at this College, who is thereby constituted State Chemist.

Morrill Hall, erected in 1898, provides laboratories, lecture and class rooms, a dark room and storage rooms for the Agricultural and Biological Departments. The extensive insect collections of past and present State Entomologists, and the State Herbarium are housed in this building. The Departments of Entomology and Botany have a small greenhouse attached to Morrill Hall for use as an insectary and propagating house. In addition, several class rooms and offices are used by the Departments of Economics, English, Agricultural Education, and Languages.

The Horticultural Building, completed in 1915, provides class rooms, propagating shed and offices, opening into a range of nine greenhouses and a conservatory abutting on the south wall of the building. The main building is 200 feet long, and the adjoining greenhouses 50 feet by 20 feet each. This equipment furnishes ample accommodations for laboratory work in horticulture and is comparable to the best in the country.

The College Sanitarium, completed in 1901, is being used, temporarily, as the Administration Building.

The Agricultural Building, for which an appropriation was made by the General Assembly in 1916, is in course of construction and will be completed within the next few months.

GENERAL AIM AND PURPOSE.

The College is the State school of science and technology. While seeking, first of all, to perform the functions of an agricultural college, its sphere of work has been widened to embrace all the sciences akin to agriculture, and all the arts related to mechanical training. To these special and prominent lines of work have been added such branches of study as are necessary for a liberal education, for the development of the intelligent citizen and for general culture. The purpose of this college is to give young men anxious to prepare themselves for the active duties of life such training in the lecture room, laboratory and field as will enable them to take their places in the industrial world well prepared for the fierce competition of the day.

Recognizing that such an education, in order to be of practical advantage to many, must be offered at a cost within the means of all, the expenses for the year to the student have been reduced to the point where his college dues are not in excess of his ordinary daily expenses. It is to be remembered that the College is a State institution, in part supported by the State, in part by the Federal Government through its several endowment Acts, and that it is in no sense a money-making institution, but simply a medium of disbursement by the Government to those upon whom the safety, progress and prosperity of the State so largely depend.

While the College provides, as will hereafter be explained, several distinct courses of instruction, looking to the special training of the student in agriculture, engineering and science, the fact is clearly kept in view that a sound foundation must be laid for each and every course. Successful specialization is only practicable after the student has prepared for it by a thorough training in the essentials. All education must be narrow and one-sided which does not provide for the general culture of the student, and which does not look first to the natural and normal development of the individual. That the aim of the College is to train the student in a specialty without sacrificing his development in general culture is shown in the description of the general working plan given in the next paragraph.

It begins with the student in the first or Freshman year with a systematic and carefully adjusted scheme of work, differing but little in the several courses, and looking to his general development in mental strength, range of information and power of expression and thought. At the beginning of the second or Sophomore year the differentiation may be said to begin along those lines for which he shows most natural aptitude. This gradual specialization continues during the third or Junior year, until in the last or Senior year, his work consists chiefly of a few closely correlated topics, in which he is thus able thoroughly to prepare himself. With the present equipment of the laboratories and work-shops a student is able to become so proficient in his chosen line of work that when he leaves the College a successful career is open to him.

The Maryland State College of Agriculture is, logically, the crowning point of the public school system of Maryland. Its aim in particular is to provide a higher education for the graduates of the county high schools. To this end its curriculum is adjusted to meet the preparation of such students. It is this class of young men that the College is specially desirous of reaching. Experience has shown that a large number of our most satisfactory students come as graduates from the county schools, and no efforts will be spared to make the transition from the high school to the College a possible one for all those actuated by an earnest desire to complete their education.

DEPARTMENTS OF THE COLLEGE.

AGRICULTURE—
- AGRICULTURAL EDUCATION.
- AGRONOMY.
- ANIMAL HUSBANDRY.

BOTANY AND VEGETABLE PATHOLOGY.
CHEMISTRY AND BACTERIOLOGY.
CIVIL ENGINEERING.
ECONOMICS, POLITICAL SCIENCE AND HISTORY.
ELECTRICAL ENGINEERING AND PHYSICS.
ENGLISH AND PUBLIC SPEAKING.
ENTOMOLOGY AND ZOOLOGY.
HORTICULTURE—
- POMOLOGY.
- VEGETABLE CULTURE.
- LANDSCAPE GARDENING AND FLORICULTURE.
- FORESTRY.

LANGUAGES.
MATHEMATICS.
MECHANICAL ENGINEERING.
MILITARY SCIENCE AND TACTICS.
PHYSICAL CULTURE.
SUB-COLLEGIATE INSTRUCTION.
VETERINARY SCIENCE.

The following pages give, under the several departments, the general character of the courses offered by each, and the main features of their equipment.

AGRICULTURAL EDUCATION.

PROFESSOR METZGER.

The work of this Department is designed to meet the demand for men, trained in agricultural and manual arts subjects, to teach in the high schools of the State.

In the arrangement of the courses the needs of the agricultural and manual arts teacher have been kept in mind. The work however, is open to any who desire an insight into the educational principles and problems of teaching vocational subjects.

The practice teaching is arranged to give the students of this Department experience in conducting class work and laboratory and field exercises. In addition, arrangement is made whereby the student receives both instruction and experience in the teaching and supervision of elementary industrial work in secondary schools.

COURSES OFFERED.

1. Psychology. Principles of psychology. Lectures and textbook.

Text used: Angell's "Psychology."

Junior Year—First Term, 4 theoretical and 2 practical periods per week.

2. History of Education. Outline of the historical development of modern education.

Text used: Monroe's "Brief Course in the History of Education."

Junior Year—Second Term, 4 theoretical periods per week.

3. Principles of Education. Study of the principles and methods of modern education.

Text used: Bagley's "The Educative Process."

Junior Year—Third Term, 4 theoretical periods per week.

4. Secondary School Agriculture and Manual Training. The purpose of this course is the preparation of the student for the teaching of agricultural or manual training subjects through a knowledge of the educational aims, and of the principles applying to the choice of subject matter. The course involves a study of the recitation in its parts, the methods of conducting and the function of laboratory, shop, and field exercises, and the correlation of these with other subjects.

Senior Year—First Term, 3 theoretical and 2 practical periods per week.

5. Organization and Materials. A course in the organization of courses of study, demonstration projects, and the selection of materials for the work in agriculture and manual training in

secondary and elementary schools. This course is designed to acquaint the student with the materials and equipment necessary for the successful teaching of secondary school sciences and arts, scope of work, order of presentation and the sources of supplies and equipment for recitation and laboratory work. The function and the use of school land and of home demonstration work are considered.

Senior Year—Second Term, 3 theoretical and 2 practical periods per week.

6. Rural Organization. A course in which the aims, the functions, the methods of organization, and the relation of rural to city institutions are considered.

Senior Year—Third Term, 3 theoretical and 2 practical periods per week.

7. Research and Thesis. The subject and lines of work to be arranged with the head of the Department. The purpose of the thesis is to study special problems in agricultural education.

Senior Year—Second and Third Term, 2 practical periods per week.

8. Rural Organization. Methods of organization in rural communities and similar problems are considered in this course.

Second Year—Third Term, 2 theoretical periods per week.

AGRONOMY.

PROFESSOR TALIAFERRO.
PROFESSOR METZGER.
ASSOCIATE PROFESSOR BRUCE.
ASSOCIATE PROFESSOR WENTZ.

The Department of Agronomy takes up the agricultural work pertaining to the field and its crops. A number of courses are offered. These treat of farm crops, their classification, soil and climatic adaptations, culture and improvement; soils, their physical and chemical properties, methods of treatment for maintenance

and increase of productiveness; soil amendments, as manures, fertilizers, cover crops and lime; farm drainage; and farm management.

The College farm consists of two hundred and sixty-five acres of land and is operated by the Maryland Agricultural Experiment Station together with an adjoining leased farm.

Students of the College are kept in close touch with the general and experimental work on these farms which offer an unusual variety of soils and crops for observation and study.

Many of the students, who wish to do so, find work at fair wages on the farm and are thereby enabled to pay a part of their expenses as well as to gain valuable experience.

Well-equipped soil and crop laboratories, and a greenhouse devoted to the use of the Agronomy Department afford exceptional opportunities for the accurate study, at all seasons, of the scientific principles involved in the handling of soils and the production of farm crops.

COURSES OFFERED.

20. Farm Crops. A systematic study of the forage and cover crops of the United States, with special emphasis as to Maryland conditions, distribution, classification, economic importance, and cultural methods.

Freshman and Junior Year—Third Term, 3 theoretical and 2 practical periods per week.

21. Farm Crops. A detailed study of the cereal crops, including their history, distribution, adaptation, cultivation, harvesting, and marketing. Special attention is given to corn production.

Sophomore Year—First Term, 2 theoretical and 2 practical periods per week.

22. Soils. A course dealing with the origin, classification, and the physical and chemical properties of soils in their relation to tillage and the maintenance of soil fertility. Field excursions will be made to study soil formation, problems of drainage, etc.

The study of soils is conducted by means of lectures, text-books, and laboratory work.

Sophomore and Senior Year—First and Second Term, 2 theoretical and 4 practical periods per week.

23. Fertilizers. Of vital interest to the eastern and southern farmer of the present day is the fertilizing question. Between it and the profit and loss account is a very close connection, and frequently a lack of knowledge of the subject entails upon the farmer both the loss of money paid and of the possible increase of the crop. In this course the subject is developed logically from the needs of the plant and the efficiency of the soil to the selecting of the proper plant foods for each crop under varying conditions of soil and climate. Special attention is given to the home-mixing of fertilizers.

Sophomore Year—Third Term, 2 theoretical and 4 practical periods per week.

24. Principles of Soil Management. Prerequisite, Soils 22. A laboratory course dealing with special problems of soil management and soil analysis intended for students specializing in agronomy. Special attention will be given to the study of soils from the College farm, which have been subjected to different methods of cropping and treatment.

Junior Year—First Term, 4 practical periods per week.

25. Grain Judging. This course consists of a critical comparative study of the cereals and other farm seeds from the standpoint of market grading and fitness for seed purposes. It is designed so to familiarize the student with the subject that he may not only handle his own crops to the best advantage, but may also be qualified to act as a judge at county fairs, grain shows, etc. Instruction is given by means of laboratory practice and lectures. This course is given to students in the Rural Engineering Course in the Senior Year.

Junior Year—Second Term, 1 theoretical period and 4 practical periods per week.

Senior Year—Second Term, 2 practical periods per week.

26. Advanced Farm Crops. A course dealing with the improvement by selection and breeding of the cereal and forage crops. Great care is given in this course to the study of the re-

sults obtained in plant breeding at the Maryland Experiment Station and the United States Bureau of Plant Industry Farm at Arlington, Virginia.

Senior Year—First Term, 2 theoretical and 4 practical periods per week; Second Term, 4 practical periods per week.

27. Advanced Soils. Prerequisite Soils 22. A course dealing with the study of the principal soil regions, series, and types of the United States, and specially of the soils of Maryland as to origin, formation, composition, and value from an agricultural point of view. This course is intended for students specializing in agronomy.

Students will be required to survey and map a given area of the College farm and make a report, including description of both the soils and subsoils, their physical properties, and the comparative value of the different soil types found.

Senior Year—First Term, 2 theoretical and 4 practical periods per week.

28. Farm Management. The course in farm management is designed to connect up the principles and practice which the student has acquired in the several technical courses and to apply them to the development of a successful farm business.

Economical production and disposition of products, maintenance and improvement of the producing units, and business methods in every operation are as necessary to success in farming as in every other vocation and the effort is made not only to inculcate the necessity for these principles but to show how they may be adopted and practiced.

Senior Year—Second and Third Term, 2 theoretical and 4 practical periods per week.

29. Research and Thesis. To be arranged for with the head of the Department.

Senior Year—Third Term, 4 practical periods per week.

30. Farm Crops. A detailed study of the common farm crops. Lectures and practical work in field and laboratory.

First Year—First Term, 3 theoretical and 2 practical periods per week.

31. Soils. A study of the physical and chemical conditions of the soils in their relation to profitable agriculture. Lectures, laboratory and field work.

First Year—Third Term, 3 theoretical and 4 practical periods per week.

32. Advanced Agronomy. Students desiring to specialize in agronomy may arrange with the head of the Department for a special course during the Second year. It is not required that all of the time scheduled be given to agronomy subjects. If thought best, a part may be given to agronomy and a part to animal industry or horticulture. Elective.

Second Year—First and Third Term, 4 theoretical and 8 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week.

33. Fertilizers. A study of the selecting of proper plant food for each crop under varying conditions of soil and climate. Special attention is given to the home-mixing of fertilizers.

Second Year—Second Term, 3 theoretical and 2 practical periods per week.

34. Grain Judging. Instruction is given in this course to fit the student to handle his own crops to the best advantage and to qualify him to act as a judge at county fairs, grain shows, etc.

Second Year—Second Term, 1 theoretical period and 4 practical periods per week.

35. Farm Management. Lectures and practice.

Second Year—Second Term, 2 theoretical and 2 practical periods per week.

36. Farm Forage Crops. A study of the forage crops of the United States, particularly those adapted to Maryland conditions.

Second Year—Third Term, 3 theoretical and 2 practical periods per week.

ANIMAL HUSBANDRY.

PROFESSOR REED.
PROFESSOR RUFFNER.
MR. STANTON.

The Department of Animal Husbandry stands for all lines of work which pertain to the judging, selecting, breeding, feeding, development, care and management of the various breeds and classes of domesticated animals. Good herds of stock are being established at the Maryland Agricultural Experiment Station which are of use to the student in his studies. In addition to the supply of stock on the farm the proximity of the College to Washington and Baltimore makes it possible for the student to get excellent material for study.

It is quite evident that there is but one way to make a young man a proficient judge of live stock, and that is by training the eye. In all of the lecture and laboratory work outlined in the courses the work is demonstrated with living specimens.

Junior and Senior students taking this course are sent to farms throughout the State of Maryland to supervise advanced registry tests for the dairy associations. These trips give the students the advantage of observing the most up-to-date dairy farms in the country, in addition to practical experience. Each year a judging team consisting of three students participates in the student's contest in judging dairy cattle at the National Dairy Show. Students in any of the agricultural courses are eligible to compete for a place on this team. The selection of students for the team is based upon ability and efficiency in this line of work.

Students desiring to specialize in any line of live stock are allowed to do so and animals are furnished for the special purpose whenever possible.

COURSES OFFERED.

40. Breeds and Judging. This course is devoted to the detailed study of all breeds and classes of live stock. The practical work commences with a study of the animal form by the use of the score-card. Special attention is given to the relation of form to function.

First, the productive types are firmly fixed in the student's mind; then more specific breed characteristics are taken up. In teaching this work living specimens and lantern slides are used.

References, text-books and lectures.

Freshman Year—First Term, 1 theoretical period and 4 practical periods per week.

41. Elementary Live Stock Management. Lectures are given on the housing, feeding, care and management of dairy cattle, beef cattle, horses, sheep and swine. The practical work consists of the application of the principles developed in the lectures and takes up the drawing of barn plans and other stable conveniences. The last few weeks of this term are devoted to a special study of the testing of milk and milk products.

References and lectures.

Freshman Year—Second Term, 3 theoretical and 4 practical periods per week.

42. Breeds and Breeding. One afternoon of each week is devoted to the study of breeds and types of live stock. The student is taught the relative value of the different types, special attention being given to the market classes and grades of live stock. Horses are studied from the standpoint of those most valuable to the farmer on the farm and those demanded by cities and the U. S. Army. The term is divided so as to give the study of horses, beef cattle, sheep and swine an equal amount of time. This course includes excursions to live stock shows and noted breeding farms.

Junior Year—First Term, 4 practical periods per week.

43. Animal Nutrition. This course embraces the principles and practice of animal feeding. After covering the principles of nutrition, it takes up the composition of feeding stuffs, their combination into properly balanced rations, and the relation between the sustenance of animals and their products. Many practical problems are solved. Students entering this course should have completed courses in organic chemistry and comparative anatomy and physiology.

Text-books, lectures, and references.

Junior Year—Second Term, 3 theoretical and 2 practical periods per week; Third Term, 2 theoretical and 4 practical periods per week.

44. Principles of Breeding. This course takes up the principles and practices involved in the improvement of domestic animals, including the subjects of reproduction, variation, heredity, selection, line breeding, inbreeding, cross-breeding, grading and a historical study of the results.

Junior Year—Second Term, 3 theoretical periods per week.

45. Animal Husbandry. Fundamental principles of animal husbandry and their relations to soil fertility and farm economy. This course is given to students in rural engineering.

Lectures, references, laboratory work, and field excursions.

Junior Year—Third Term, 2 practical periods per week.

46. Stock Judging. This is an advanced course in the judging of live stock. The major portion of the work is done by the method of comparative judging, similar to county and state fair work.

Text-books, references, and lectures.

Junior Year—Third Term, 2 theoretical and 4 practical periods per week.

47. Animal Nutrition. This advanced course is given so that each student can make a special study of animal production, including a consideration of successful practices in feeding for market, fitting for show, and the management of the breeding herd or flock. Independent work is allowed such as rearing for mutton and wool; production of winter lambs; fitting horses for sale; and methods of handling and training horses.

Senior Year—First Term, 3 theoretical and 4 practical periods per week.

48. Farm Dairying and Dairy Manufactures. This course takes up a study of the care and handling of milk and cream on the farm, centrifugal separation, clarification, pasteurization, the manufacture of frozen products, neufchatel and cottage cheese, the preparation and marketing of fermented milk drinks, preparation and use of starters, farm butter making, determination of moisture and salt in butter under creamery operation, determination of spe-

cific gravity and total solids in milk by means of the lactometer, and the per cent. of fat in ice-cream, evaporated milk, and condensed milk with the Babcock machine.

References and lectures.

Senior Year—First Term, 3 theoretical and 8 practical periods per week.

49. Dairy Management. This course is devoted to a study of the care, management and feeding of the dairy herd; selection and care of the herd bull; raising calves and heifers; improvement of the herd through breeding and feeding operations; pedigrees; keeping herd records and the practical applications of methods for the production of clean milk.

References and lectures.

Senior Year—Second Term, 2 theoretical and 4 practical periods per week.

50. Farm Poultry. This course takes up the methods of housing, natural and artificial incubation and brooding, feeding, breeds, and diseases of poultry.

Lectures, references, and text-books.

Senior Year—Second Term, 3 theoretical periods per week.

51. Advanced Live Stock Management. The work to be done in this course is arranged by the head of the Department and the individual student. The student is to take some class of farm animals, feed and care for them. Each student is to satisfy the instructor that he can milk and feed dairy cows. Other animals besides dairy cows are used whenever desirable.

Senior Year—Third Term, 2 theoretical and 4 practical periods per week.

52. Research and Thesis. The lines of work and subjects to be investigated are to be arranged with the head of the Department. The object of this work is to develop independence and originality in the student, and also to give him a taste for personal investigation upon lines which are of particular interest to himself. The results of these investigations are usually incorporated in a thesis.

Senior Year—Second Term, 4 practical periods per week.

53. Breeds and Judging. The student begins with the breeds of live stock, making a thorough study of their development and characteristics and also of the pedigrees and performances of superior individuals among horses, cattle, sheep and swine. The practical part of the course is devoted to the judging of horses, dairy cattle, beef cattle, sheep and swine.

First Year—First Term, 2 theoretical and 4 practical periods per week.

54. Breeding. The main object of this course is to direct attention and to stimulate interest in the more tangible physical basis of heredity. A scientific study of the physical aspects of heredity leads to conclusions which fully accord with the teachings of the work of our master breeders. It is the aim to limit discussion to points upon which scientific opinion is quite well agreed.

Text-books, lectures, and references.

First Year—Second Term, 3 theoretical and 2 practical periods per week.

55. Dairying. This course takes up a study of the care and handling of milk and cream on the farm, centrifugal separation, pasteurization and the testing of milk and milk products.

First Year—Third Term, 3 theoretical and 4 practical periods per week.

56. Animal Industry. A study of the successful methods of operating farms devoted chiefly to live stock production and of the systems to be applied to Maryland conditions. The student may arrange with the head of the Department to utilize one-half of scheduled time in other Departments. Elective.

Second Year—First and Third Term, 4 theoretical and 8 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week.

57. Animal Feeding. This course embraces the principles and practice of animal feeding. After covering the principles of feeding it takes up the composition of feeding stuffs, their combinations into properly balanced rations, and the relation between the sustenance of animals and their products. Problems relating to balanced rations are solved.

Text-books, lectures, and references.

Second Year—First Term, 3 theoretical and 2 practical periods per week.

58. Farm Poultry. A general course dealing with poultry house construction, yarding, fattening, killing, dressing, marketing, and a brief description of the more common breeds. Demonstrations are given in the practices of handling poultry.

Second Year—Third Term, 2 theoretical periods per week.

BOTANY AND VEGETABLE PATHOLOGY.

PROFESSOR NORTON.

*ASSOCIATE PROFESSOR ROSE.

ASSOCIATE PROFESSOR ZIMMERMAN.

ASSOCIATE PROFESSOR TEMPLE.

The courses in botany are intended to give such knowledge of the vegetable kingdom as is a proper element in general culture; to train the student mind in observation, comparison, generalization and other mental processes essential to true scientific methods in any work; and to furnish a basis for practical studies directly connected with agriculture, since plants are the subjects dealt with in the field and garden. In addition to the courses in pure botany, others of special economic trend are given. These are specially for students in the Agricultural and Horticultural Courses, and take up such botanical studies of cultivated plants, plant diseases, etc., as may be useful in practical life to the professional farmer or gardener.

The equipment and means for illustration and demonstration consist of a reference library containing the principal botanical works needed by students, charts and maps, compound and dissecting microscopes, preserved specimens for illustration and a representative collection of Maryland plants; microtome and other instruments together with reagents and apparatus for histological work and physiological experiments; and a culture room, sterilizers, incubators and other facilities for the study of plant diseases.

*Absent on Leave.

Advanced students have an opportunity to observe the work being done in the laboratory of Vegetable Pathology and greenhouse of the State Horticultural Department and of the Experiment Station, and, if competent, to assist in the same. Special attention is given to students who wish practice in the treatment of plant diseases, as it is the desire of the Department to encourage young men to engage in this work as a business.

COURSES OFFERED.

60. General Botany. A course designed to give the student a view of the plant kingdom. Type specimens of the algae, fungi, liverworts, mosses, ferns and seed plants are studied in the field and laboratory and careful drawings made of the various structures. In the study of each type, special attention is given to such points as habitat, nutrition and methods of reproduction.

Freshman Year—Third Term, 2 theoretical and 6 practical periods per week.

61. Plant Histology. The student becomes familiar with the cell and its parts and the different tissues of the various parts of the plant. Typical cells of the protective, strengthening, conducting, storage and meristematic tissues of the plant are studied and careful drawings made.

Sophomore Year—First Term, 1 theoretical period and 6 practical periods per week.

62. Plant Physiology. This course gives the student an understanding of the life processes of the plant. A set of fifty experiments is performed in the laboratory and greenhouse and the results carefully recorded. These experiments illustrate the essential facts of such processes as absorption and loss of water, photosynthesis, relation to the inorganic and organic elements, growth, movement and death.

Sophomore Year—Second Term, 2 theoretical and 4 practical periods per week; Third Term, 1 theoretical period and 4 practical periods per week.

63. Comparative Morphology and Classification. This course is an extension of course 60 and is required of all students specializing in biology.

Junior Year—First Term, 2 theoretical and 4 practical periods per week.

64. Economic Plants. Lectures are given on the names, classification, nativity and uses of the useful and detrimental plants of the world, and field and laboratory studies are made of the common cultivated plants. This is done with a view to enabling the student to know the scientific names and relationship of the plants with which he comes in contact.

Junior Year—Second Term, 1 theoretical period and 4 practical periods per week.

65. Microscopy of Foods and Drugs. The identification of various food and drug products and their adulterants by means of the microscope.

Junior Year—Third Term, 2 theoretical and 4 practical periods per week.

66. Vegetable Pathology. This includes microscopic and macroscopic examinations of parasitic fungi in their relations to diseases in higher plants, studies of the nature of disease in plants, physiological diseases, etc., together with the best known means for the prevention and control of diseases. Lectures, reference work, laboratory work and experiments in infection and treatment constitute the course.

Junior Year—Third Term, 2 theoretical and 4 practical periods per week.

67. Vegetable Pathology. This course is an extension of the above course and is required of students specializing in botany.

Junior Year—Third Term, 2 theoretical and 6 practical periods per week.

68. Advanced Botany. Elective courses for students of the Biological Course and for post-graduate students are offered in methods in plant pathology, botanical microchemistry, histology of trees, weeds and poisonous plants, seed testing, taxonomy or advanced work in any of the undergraduate courses before mentioned.

Senior Year—7 theoretical and 12 practical periods per week.

69. Research. Students electing botany devote a portion of their time in the Senior year to the completion of an original

study of some botanical subject upon which they prepare the graduation thesis. The time scheduled is a minimum.

Senior Year—8 practical periods per week.

70. Seeds and Weeds. The student is taught to recognize the important weeds and the seeds produced by them.

First Year—First Term, 1 theoretical period and 4 practical periods per week.

71. Plant Diseases. A practical study of diseases of plants to enable the student to recognize them in the field. A course in sprays and spraying is given in cooperation with the Zoology Department in which the student is taught methods of disease control.

Second Year—First Term, 2 theoretical and 2 practical periods per week.

CHEMISTRY AND BACTERIOLOGY.

PROFESSOR MCDONNELL.
PROFESSOR BROUGHTON.
MR. DENNIS.
MR. WHITE.

The Chemistry Department is charged with two distinct classes of work. (1) The licensing, inspection and analysis of fertilizers, feeds and agricultural lime sold in the State, the Professor of Chemistry being, *ex officio,* the State Chemist. The results of this work are published in a "Quarterly" bulletin which is sent free to all Maryland farmers who apply for it. (2) The instruction of students.

The Chemical Laboratory Building contains laboratories, office and balance room for the State fertilizer, feed and lime control work, lecture room, supply room and four other laboratories. In addition classrooms in Morrill Hall are used as are two bacteriological laboratories at the Experiment Station and the Experiment Station canning laboratory.

The laboratories are well equipped with standard apparatus and chemicals, chemical and assay balances, polariscopes, refractometers,

spectroscopes, microscopes with high-power oil immersion lenses, etc. Each student is provided with a locker, reagents and apparatus and has the use of a working desk.

The Department is provided with a library of standard reference books on chemistry and related subjects, to which additions are made from time to time.

Instruction in chemistry is begun with the Second Term of the Freshman year. Laboratory work by the student is emphasized and special attention is given to elements and compounds of practical and economic importance. The first year is intended to give the student that practical and theoretical knowledge of elementary chemistry which is essential in the education of every man, no matter what his vocation. It also serves as a foundation for advanced work in chemistry, if the Course in Chemistry is chosen. The outline of Course in Canning may be found on page 106.

CHEMISTRY.

COURSES OFFERED.

80. General Chemistry. Recitations, lectures and practical work in the laboratory, where the student performs the experiments under the directions of instructors.

Text-book: McPherson and Henderson's "General Chemistry."

Freshman Year—Second and Third Term, 4 theoretical and 2 practical periods per week.

81. Metals and Qualitative Analysis. A continuation of course 80.

Sophomore Year—First Term, 2 lecture and 6 practical periods per week.

82. Qualitative Analysis. An advanced course for students in the Chemical Course.

Reference books: Treadwell and Hall's "Qualitative Analysis," and Prescott and Johnson's "Qualitative Analysis."

Sophomore Year—Second Term, 1 lecture period and 8 practical periods per week.

83. Quantitative Analysis. For students not taking the Chemical Course. A brief course illustrating some of the general

principles in the quantitative study of chemistry. In the latter part of the course the students are given samples of fertilizers, feeds, butter, milk, etc., for analysis.

Text-book: Lincoln and Walton's "Quantitative Analysis."

Sophomore Year—Second Term, 1 conference period and 8 practical periods per week.

84. Quantitative Analysis. The principal operations of quantitative analysis. Standardization of the chemical balance. Standardization of weights and apparatus used for chemical analysis. Typical gravimetric, volumetric, calorimetric and electrolytic methods are taken up and discussed.

Text-book: Olsen's "Quantitative Analysis."

Sophomore Year—Third Term, 3 lecture and 10 practical periods per week.

85. Mineralogy. This is a course of determinative mineralogy. The more important minerals are identified by their more characteristic physical and chemical properties, the blow-pipe being an important aid.

Text-book: Brush and Penfield's "Determinative Mineralogy and Blow-pipe Analysis."

Sophomore Year—Third Term, 1 lecture period and 4 practical periods per week.

86. Geology. A course in the history of dynamic, stratigraphic and physiographic geology. The latter part of the course is devoted to the geology of Maryland, specially as affecting the character of the soil, mineral wealth and other economic conditions of the State.

Text-book: Chamberlin and Salisbury's "College Geology."

Junior Year—First Term, 2 lecture and 2 practical periods per week; Second Term, 2 lecture periods per week.

87. Organic Chemistry. For students taking the Agricultural, Biological and General Science Courses. Recitations and lectures.

Text-book: Chamberlain's "Organic Agricultural Chemistry."

Junior Year—First Term, 4 theoretical periods per week.

88. Organic Chemistry. For students making a specialty of agricultural chemistry.

Text-books: Perkin and Kipin's "Organic Chemistry," and Gattermann's "Practical Methods of Organic Chemistry," translated by Schober.

Junior Year—3 lecture and 4 practical periods per week.

89. Quantitative Analysis. Consisting of gravimetric, volumetric, and colorimetric determinations. Samples are selected so as to illustrate the general principles of the work. The volumetric work consist of acidimetry, alkalimetry, iodometry, oxidation and reduction. Neatness and accuracy are insisted upon in the laboratory, and in the conference periods the chemistry and mathematics of each determination are thoroughly discussed.

Text-books: Olsen's "Quantitative Analysis," and Sutton's "Volumetric Analysis."

Junior Year—First and Third Term, 1 lecture period and 12 practical periods per week; Second Term, 1 lecture period and 14 practical periods per week.

90. Stoichiometry. Problems relating to analytical and applied chemistry.

Junior Year—1 theoretical period per week.

91. Agricultural Chemistry. The chemistry of soils, fertilizers, plant life, animal life, etc.

Text-book: Stoddart's "Chemistry of Agriculture."

Senior Year—First Term, 4 theoretical periods per week.

92. Agricultural Chemical Analysis. This is an advanced course in the analysis of fertilizers and fertilizing materials, feeding stuffs, butter, milk, sugar, starch, etc.

Senior Year—First Term, 12 practical periods per week.

93. Physiological Chemistry. Recitations and lectures.

Text-book: Hawk's "Physiological Chemistry."

Senior Year—First Term, 4 theoretical and 4 practical periods per week.

94. Physical Chemistry. In this course the student becomes familiar with the advanced theories of chemistry, and some of the methods employed by research chemists. The laboratory work consists of the determination of the boiling and melting points, lowering of the freezing point by substances in solution, determina-

tion of vapor densities, and combustion methods for the determination of carbon, hydrogen and nitrogen.

Text-book: Walker's "Physical Chemistry."

Senior Year—Second Term, 3 theoretical and 14 practical periods per week; Third Term, 3 theoretical periods per week.

95. Inorganic Chemistry. An advanced course covering more in detail the subject matter set forth in the general chemistry offered in the Freshman year.

Senior Year—Second and Third Term, 3 theoretical periods per week.

96. Industrial Chemistry. The study of the practical methods employed in the various chemical industries. Visits are made to ice, fermentation, and gas plants; also to fertilizer, glass, iron and steel works; etc.

Text-book: Thorp's "Outlines of Industrial Chemistry."

Senior Year—Second and Third Term, 3 theoretical periods per week.

97. Advanced Agricultural Analysis.

Text-book: "Methods of Analysis of the Association of Official Agricultural Chemists."

Senior Year—Third Term, 8 practical periods per week.

98. Thesis. Investigation along agricultural chemical lines to be embodied in a graduating thesis. In addition to the time scheduled, a part of the work done under courses 93, 94 and 97 will be included.

Senior Year—Third Term, 6 practical periods per week.

99. Farm Chemistry. This course consists of an elementary study of general and agricultural chemistry, with special reference to the chemistry of plants, animals, fertilizers, etc. The course is offered to students taking the two-year Course in Agriculture.

Text-book: Kahlenberg and Hart's "Chemistry in Its Relations to Daily Life."

First Year—Third Term, 2 theoretical and 2 practical periods per week.

Second Year—First Term, 4 theoretical and 4 practical periods per week.

BACTERIOLOGY.

COURSES OFFERED.

100. AGRICULTURAL BACTERIOLOGY. Preparation and sterilization of routine and special media. Routine and special staining methods. Studies on the biochemical action of bacteria. The morphological and physiological characteristics of those organisms involved in the economy of nature, dairying, agriculture, etc. The bacteriological examination of milk and its products, soils and foods. Practical demonstrations of problems in immunity.

Text and reference books: Jordan's "General Bacteriology," Swithinbank and Newman's "Dairy Bacteriology," Conn's "Agricultural Bacteriology," and Giltner's "Microbiology."

Junior Year—Second and Third Term, 8 practical periods per week.

101. GENERAL BACTERIOLOGY. Preparation of media and stains. The practical application of various methods of sterilization. A study of the various procedures for anaerobic development and isolation of bacteria in pure cultures. Standard procedures for the examination of pure cultures supplemented by a routine determination of the morphological and physiological characteristics of pure cultures isolated from nature and having special functions in the field of agriculture, dairying and sanitation. The routine bacteriological examination of drinking waters, milk and its products, foods, soils and disinfectants. Lectures and practical demonstrations in immunity and resistance.

Text and reference books: Hiss and Zinnser's "General Bacteriology," Conn's "Agricultural Bacteriology," Prescott and Winslow's "Bacteriology of Drinking Waters," Giltner's "Microbiology," and Fred's "Soil Bacteriology."

Senior Year—1 lecture period and 6 practical periods per week.

102. BACTERIOLOGY. Lectures and practical demonstrations of subjects pertaining to agricultural and dairy bacteriology, with emphasis on the bacteria in milk and soils.

Reference books: Swithinbank and Newman's "Dairy Bacteriology," and Lipman's "Bacteria in Relation to Country Life."

Second Year—Second Term, 4 practical periods per week.

CIVIL ENGINEERING.

PROFESSOR TALIAFERRO.

ASSISTANT PROFESSOR SPRINGER.

The subjects pertaining to civil engineering are arranged with the object of emphasizing the fundamental principles through lectures and recitations in the class-room, supplemented by practical exercises in the field, drafting room and laboratory. Self-reliance being an essential factor in the success of an engineer, the student is encouraged in every way to develop this habit.

EQUIPMENT. In addition to minor engineering instruments, etc., the Department is at present equipped with three compasses, four transits and four levels.

The experimental laboratory contains a thousand pound Riehle cement testing machine and a hundred thousand pound Riehle machine for making tensile and other tests of the various kinds of materials. A description of this latter machine will be found on page 77, it having been purchased for the use of the Civil and Mechanical Engineering Departments. A description of the drafting and blue print rooms used by the Civil Engineering Department will also be found on page 77.

Some hydraulic apparatus of a character suited to the needs of the Department has been installed and other apparatus will be purchased as the funds permit.

TOURS OF INSPECTION—During the session members of the Senior and Junior classes, accompanied by an instructor, take trips for the purpose of making an examination of the different types of modern engineering construction.

COURSES OFFERED.

The subjects outlined, with a few exceptions, constitute a portion of the curriculum of students in the Civil Engineering Course.

120. GENERAL ENGINEERING DRAWING. Isometric and cabinet projections. Perspective. Water coloring. Paper stretching. Blue printing. Ornamental lettering, round writing and title work. Floor plans, elevations and architectural details. Mapping contours and profiling. Conventional signs.

Freshman Year—First Term, 4 practical periods per week.

Junior Year—Second Term, 6 practical periods per week; Third Term, 8 practical periods per week.

121. SURVEYING. This course includes the use and adjustment of engineering instruments, the methods of land surveying, the plotting and computing of areas, dividing of land, the theory of the stadia, true meridian lines, leveling, topographical surveying, railroad curves and cross sectioning.

Texts: Raymond's "Plane Surveying," Hosmer and Breed's "The Principles and Practice of Surveying," and Pence & Ketchum's "Field Manual."

Freshman Year—Second Term, 2 theoretical periods per week; Third Term, 4 practical periods per week.

Sophomore Year—First Term, 4 practical periods per week; Second Term, 4 theoretical periods per week; Third Term, 2 theoretical and 4 practical periods per week.

Junior Year—First Term, 4 practical period per week.

122. MECHANICS. A study of statics, dealing with the composition and resolution of forces, moments, couples. machines, and laws of friction; and of dynamics, dealing with velocity, acceleration, laws of motion, work, energy, and applications to problems.

Junior Year—First Term, 4 theoretical periods per week.

123. RAILWAY ENGINEERING. A study is made of preliminary and location surveys, cross sectioning, calculation of quantities, etc.

Text: Allen's "Railroad Curves and Earthwork."

Junior Year—Second and Third Term, 3 theoretical periods per week.

124. BRIDGE AND STRUCTURAL DESIGN. This course includes the complete design and detailing of a steel roof truss and a plate girder; the detailing from standard commercial drawing sheets of floor beams, girders and columns; and the complete design of a bridge truss of either the Warren or Pratt type. The stresses are determined by both analytical and graphic methods.

Texts: Merriman and Jacoby's "Stresses," Cooper's "Bridge Specifications," "Cambria Hand Book," Thompson's "Bridge and Structural Design," and Merriman and Jacoby's "Bridge Design."

Junior Year—Second and Third Term, 2 theoretical and 4 practical periods per week.

125. Mechanics of Materials. This course treats of the elasticity and resistance of materials of construction, and the mechanics of beams, columns and shafts.

Text: Merriman's "Mechanics of Materials."

Junior Year—Second Term, 3 theoretical periods per week; Third Term, 5 theoretical periods per week.

126. Surveying. This course is intended, primarily, to meet the needs of students in agriculture, horticulture, and engineering education. It includes the use of the compass, transit and level, one or more methods of land surveying, the plotting and computing of areas, leveling and topographical surveying.

Texts: Robbins' "Surveying," and Springer's "Surveying Notes and Problems."

Junior Year—Third Term, 2 theoretical and 4 practical periods per week.

127. Practical Problems. The necessity for practical work on the part of those desiring to enter upon engineering as a profession is obvious. To meet this condition a number of hours have been scheduled for field and laboratory work in practical problems relating to engineering. The laboratory work includes the testing of cement and other materials of construction, various hydraulic experiments, the operation of engines, etc. The scheduled hours constitute a minimum, the student being encouraged to give as much more of his time as is possible to problems of this character.

Junior Year—Third Term, 8 practical periods per week.

Senior Year—First Term, 8 practical periods per week; Second and Third Term, 4 practical periods per week.

128. Farm Drainage. Students in agriculture continue course 126, the time being given to problems in drainage, particularly tile drainage.

Senior Year—First Term, 4 practical periods per week.

129. Concrete. A study of cement, concrete, and reinforced concrete construction.

Text: Hool's "Reinforced Concrete Construction."

Senior Year—First Term, 4 theoretical periods per week.

130. Hydraulics. The principles of hydraulics, flow through pipes, water supply, etc., are discussed in this course. This course is continued in the Second Term as hydromechanics.

Text: Lea's "Hydraulics."

Senior Year—First Term, 4 theoretical periods per week.

131. ESTIMATES OF COST. Lectures are given on the methods of estimating cost and these are supplemented by problems of a practical nature.

Senior Year—Second Term, 1 theoretical period and 4 practical periods per week.

132. GEODESY. A study of the theory and methods of geodetic surveying.

Senior Year—Second Term, 3 theoretical periods per week.

133. HIGHWAY ENGINEERING. This course includes the location, construction and maintenance of roads.

Text: Blanchard and Drowne's "Highway Engineering."

Senior Year—Third Term, 5 theoretical periods per week.

134. CONTRACTS AND SPECIFICATIONS. A study of simplicity and legality in the preparation of contracts and specifications in engineering works.

Text: Tucker's "Contracts in Engineering."

Senior Year—Third Term, 2 theoretical periods per week.

135. FARM WATER SYSTEMS. An elementary course dealing with the water supply and the disposal of sewage on the farm.

Second Year—First Term, 4 practical periods per week.

136. FARM DRAINAGE. An elementary course in the theory and practice of drainage.

Second Year—Third Term, 2 theoretical and 2 practical periods per week.

ECONOMICS, POLITICAL SCIENCE AND HISTORY.

PROFESSOR BOMBERGER.

MR. SCHULZ.

The courses in this Department are specially designed to prepare young men for the active duties of citizenship. The first year of the Collegiate work is devoted to the study of modern history, which is followed by the principles of civil government, constitutional history, political economy (with especial reference to current, social, rural and industrial problems), and, finally, the elements of business and international law.

ECONOMICS AND POLITICAL SCIENCE.

COURSES OFFERED.

140. Civil Government. Study of the history and development of the Constitution of the United States.

Text used: Beard's "American Government and Politics."

Junior Year—First and Second Term, 3 theoretical periods per week.

141. Business Law. Principles of law as practically applied in everyday life and business.

Text used: Huffcut's "Elements of Business Law."

Junior Year—Third Term, 3 theoretical periods per week.

142. Political Economy. Principles of political economy and industrial development of the United States; rural economics; social science; and current problems.

Text used: Seager's "Principles of Economics."

Senior Year—4 theoretical periods per week.

143. Comparative Government. Study of the governments of the leading nations of Europe. Elective.

Text used: Ogg's "Governments of Europe."

Senior Year—First Term, 3 theoretical periods per week.

144. Municipal Governments. Study of typical modern municipal governments of the United States and Europe. Elective.

Senior Year—Second Term, 4 theoretical periods per week.

145. International Law. Elements of international law. Elective.

Text used: Davis' "Elements of International Law."

Senior Year—Third Term, 3 theoretical periods per week.

146. Rural Economics. Special study of rural economic problems. Elective.

Senior Year—First and Third Term, 3 theoretical periods per week; Second Term, 4 theoretical periods per week.

147. Business Law. A course for the students in the two-year Course in Agriculture on the principles of law as practically applied in everyday life and business.

Text used: Hamilton's "Practical Law."

Second Year—Second Term, 3 theoretical periods per week.

HISTORY.

COURSES OFFERED.

160. MODERN EUROPEAN HISTORY. From the treaty of Westphalia to the present time.

Text used: Robinson and Beard's "Development of Modern Europe.'

Freshman Year—3 theoretical periods per week.

161. AMERICAN HISTORY. Political and economic history of the United States with special reference to the nineteenth century. Elective.

Sophomore Year—First and Second Term, 5 theoretical periods per week; Third Term, 4 theoretical periods per week.

162. HISTORY. Selected Topics.

Junior Year—3 theoretical periods per week.

163. ADVANCED HISTORY. Elective.

Senior Year—First and Third Term, 3 theoretical periods per week; Second Term, 4 theoretical periods per week.

164. EUROPEAN HISTORY. Outlines from 476 A. D. to 1684 A. D. Prerequisite, Ancient History to 476 A. D. Elective.

Sub-Freshman Year—3 theoretical periods per week.

ELECTRICAL ENGINEERING AND PHYSICS.

PROFESSOR CREESE.

MR. HODGINS.

ELECTRICAL ENGINEERING.

The work of the Electrical Engineering Course is so arranged as to give the student a thorough understanding of the fundamental principles of the various branches of electrical engineering, and at the same time to teach him to apply these principles to the practical problems with which the engineer has to deal. This purpose is carried out by means of lectures and recitations in the class-room, supplemented by practical work in the laboratories and drawing room.

EQUIPMENT. The Electrical Engineering Laboratories are located in the east wing of the engineering building. The rooms on the first floor are used for lectures, recitations and experimental

demonstrations by the instructor; a room on the second floor is equipped with apparatus for experimental work in telephone engineering; and the basement contains the dynamo room and the electrical engineering testing room.

The electrical engineering testing room is fitted up with such appliances as are used to the best advantage in engineering practice. Special effort has been made to purchase only the best instruments, as the use of poorer grades influences the student unfavorably. With poor instruments he cannot be taught to do satisfactory work and he becomes careless in the handling of them.

Among other things the following apparatus has been purchased for the testing laboratory:

A Leeds and Northrup potentiometer and Weston standard voltmeter and ammeter for calibrating the various measuring instruments used in the laboratory. A Sharp-Millar portable photometer and a Queen & Co. standard photometer for measuring the candlepower of lamps and for determination of illumination intensities. A large number of portable ammeters, voltmeters, and indicating wattmeters for direct and alternating current measurements; standard curve drawing voltmeter and ammeter; electrostatic voltmeter; frequency meters; silver and copper voltameters; Siemen's type electrodynamometer; watthourmeters, both direct and alternating current. A Leeds and Northrup standard portable testing set; heating devices; condensers; tachometers; multiple circuit ammeter and voltmeter switches. D'Arsonval galvanometers; standard resistance boxes and bridges, including a very accurate decade resistance box and a decade resistance and Wheatstone bridge; double and single contact keys, condenser keys, etc.

The lamps used for experimental purposes include direct and alternating current multiple carbon arc, metallic arc, mercury vapor and nernst lamps.

A Curtis steam turbine, direct connected to a 35-kilowatt compound generator, has been installed for testing purposes. This may be used in connection with the College lighting plant when needed, and will be used for light and power service in the engineering building.

The laboratory is so wired that connection may be made readily with any part of the College lighting plant, with the turbo-generator or with any of the apparatus in the dynamo room.

The apparatus in the dynamo room includes the following: A 10-kilowatt rotary converter of the latest type with speed limit and end play devices. A 5 horse-power variable speed commutating pole motor. A 7.5 kilowatt, 60 cycle, 220 volt alternator designed to operate either as a polyphase generator, synchronous motor, frequency changer, constant speed induction motor, or variable speed induction motor; the following parts are supplied with the set to make possible its operation in any of the above named ways;—a stationary armature for use either as an alternating current generator or as an induction motor field; a revolving field; a squirrel cage induction motor rotor with starting compensator having self-contained switches; an induction motor rotor with internal starting resistance; and an induction motor rotor with 3 phase collector rings, external resistance, and controller. A 2 kilowatt booster set, consisting of a series motor and shunt generator with armatures mounted on the same shaft. A 5 horse-power compound direct current motor and a 1.5 horse-power shunt motor fully enclosed. A 7.5 kilowatt, 120 volt, 3 phase self-excited generator direct connected to a 115 volt compound direct current motor. A motor-generator set consisting of a 3.6 horse-power shunt motor direct connected to a 2 kilowatt compound generator. A 3 horse-power, 3 phase induction motor. A 0.5 kilowatt shunt generator belt connected to a 0.5 horse-power variable speed shunt motor. A 0.5 kilowatt series generator and a 0.25 horse-power, 60 cycle, single phase, induction motor. Two 2 kilowatt transformers to transform power from 110 or 220 volts to 1100 or 2200 volts. Various types of starting rheostats with automatic overload and no voltage release; field rheostats.

The main switchboards, consisting of two blue Vermont marble panels on pipe supports, are used to mount the necessary circuit breaker, rheostats, switches, etc., to control the generators and motors as well as the various circuits in the dynamo room and testing laboratory. Wire and water rheostats are arranged for load and regulation. Portable lamp-boards are so arranged that they may

receive, at the proper voltage, from 0.04 to 100 amperes current. Portable ammeter, voltmeter and wattmeter switchboards have been constructed for use in machine tests. In addition to the special electrical engineering equipment, the College lighting plant will be used for illustrative and experimental purposes. This plant contains, together with other apparatus useful in teaching electrical engineering, two Bullock generators of 40 kilowatts total capacity, and a switchboard equipped with a number of Weston ammeters, voltmeters and circuit breakers, and various types of rheostats.

An 8-inch Waltham bench lathe, with all the necessary attachments, has been installed in the dynamo room for the use of students in making small articles, such as binding posts, connectors, etc., for use in the laboratories.

The telephone laboratory is equipped with two demonstration sets which were made by the Western Electric Co.

The magneto set consists of an oak panel upon which is mounted the following apparatus: Two line circuits with combined jacks and signals; double wound supervisory drops; complete cord circuits including ringing and listening keys, operator's telephone set, magneto generator, etc. On one line circuit is connected a wall type subscriber's set, and on the other, a desk set.

The common battery set consists of an oak panel carrying the following equipment: Two line circuits with lamp signals; complete cord circuits, including ringing and listening keys, operator's telephone set, magneto generator, split repeating coils, condensers, retardation coil, supervisory lamps, etc. On one of the line circuits is connected a wall type subscriber's set, and on the other a desk set.

Both panels have all the wiring exposed to enable the student to make a complete study of these two principal types of telephone exchanges.

COURSES OFFERED.

The subjects outlined constitute the work in electrical engineering.

180. Elementary Electricity. This subject includes static electricity, dealing with the phenomena of electricity in its poten-

tial form, and the conception of electric potential, quantity, capacity, etc.; kinetic electricity, including the study of the fundamental laws and units, as Ohm's Law, Joules' Law, units of current, electromotive force, resistance, etc.; theory of magnetism, with its phenomena and forces; and electro-magnetism, which is the foundation for dynamo electric machine design and construction.

Text: Franklin and Macnutt's "Electricity and Magnetism."

Sophomore Year—Second and Third Term, 3 theoretical periods per week.

181. Elementary Electricity. A laboratory course designed to verify the laws and principles outlined in electrical engineering 180.

Sophomore Year—Second and Third Term, 2 practical periods per week.

182. Dynamos and Motors. This subject offers a short general course in direct and alternating currents. The study of various types of measuring instruments is followed by a general study of the operating characteristics of direct current generators and motors. The fundamental problems in single and polyphase circuits are taken up in detail; and finally a rather complete study is made of alternating current generators and motors, transformers and switchboard appliances.

Text: Franklin and Esty's "Dynamos and Motors."

Junior Year—First Term, 3 theoretical periods per week; Second Term, 4 theoretical periods per week.

183. Electro-Magnetism and Construction of Dynamos. Beginning with the Junior year and extending throughout the course, the principles involved in the construction and operation of both direct and alternating current dynamos and motors are taught. In teaching this subject, special care is exercised that the mathematical and graphical developments shall be concise and logical. The direct current machine is first examined, and this results in a discussion of the different forms of armatures, their windings, cores, commutators, etc.; the various fields; the methods of arranging the windings for different purposes; the shape and material of the magnetic circuits; the bearings, shafts, and bed-plates; the methods of insulation; a full description of the materials of

construction; the selection of types suited to the performance of specific duties; and the proper method for installing and operating. The characteristic curves and efficiencies of the different types are also illustrated at some length.

Text: Franklin and Esty's "Dynamo Electric Machinery."

Junior Year—First and Third Term, 3 theoretical periods per week; Second Term, 4 theoretical periods per week.

184. Electrical Engineering Laboratory. This elementary course in testing includes the methods of measuring resistance, current and electromotive force; elementary photometry; and methods of making up connections on various types of machines.

Junior Year—First and Second Term, 4 practical periods per week.

185. Electrical Engineering Laboratory. The study of direct current instruments. The measurements of resistance, current, and electromotive force; the use of the Wheatstone Bridge and galvanometers; loop and capacity tests of cables; calibration of instruments; study of direct current machines; testing of arc lamps; photometry; the operation of machinery and determination of the characteristic curves and efficiencies of machines.

Junior Year—First and Third Term, 8 practical periods per week; Second Term, 4 practical periods per week.

186. Primary and Secondary Batteries. The theories involved in the primary cell are developed and attention is directed to the various measurements and calculations pertaining to the subject. A study is made of the construction and use of the latest types of commercial cells.

Following the preliminary work on the primary cell, the study of the lead storage battery is taken up in detail. The work includes the general theory, the mechanical construction and the commercial use of the various types of cells, together with the chemical and electrical actions encountered. In connection with the storage cell a study is made of the construction and use of the different forms of the auxiliary apparatus, such as end-cell switches, boosters, etc.

Text: Lyndon's "Storage Battery Engineering."

Junior Year—Third Term, 2 theoretical periods per week.

187. Electric Machine Design. Practical calculation of dynamos, including detail calculations of field cores, armature windings, frames, commutator, armature core and collecting devices.

Junior Year—Third Term, 2 theoretical and 4 practical periods per week.

Senior Year—First Term, 4 practical periods per week.

188. Alternating Currents and Alternating Current Machinery. A complete study is made of the fundamental phenomena and theories dealing with the effects of alternating currents, both single-phase and poly-phase. Included in this course there are a large number of problems, both analytical and graphical, which are specially valuable for giving a clear appreciation of the effects of self-inductance, mutual-inductance, and capacity in single-phase and poly-phase alternating current circuits.

The theory, construction and practical applications of single-phase and poly-phase alternating current machinery, which includes generators, synchronous, induction and repulsion motors, rotary converters, transformers, regulators, etc., are taken in detail.

The fundamental principles of the machinery are developed in the class-room and applied concurrently in the laboratory and designing room with special reference to their practical utilization.

Texts: Franklin and Esty's "Alternating Currents," McAllister's "Alternating Current Motors," and Karapetoff's "Electric Circuit."

Senior Year—First and Second Term, 5 theoretical periods per week; Third Term, 3 theoretical periods per week.

189. Electrical Engineering Laboratory. The determination of inductance, impedance, condensance, etc.; measurement of power in alternating current circuits; regulation and efficiency tests of alternators and transformers; parallel operation of alternators; phase characteristics, power factor, etc. of synchronous motors; poly-phase transformation; mesh and star connections of transformers; tests of induction and synchronous motors.

Senior Year—8 practical periods per week.

190. Electric Lighting. This work begins with the study of the different systems of distribution used in arc and incandescent lighting and the discussion of the advantages and disadvantages of each from both financial and engineering standpoints. Attention

is given to the best methods of obtaining good regulation, as upon this satisfactory lighting service depends. The proper arrangement and wiring of switchboards and the instruments which they contain, as well as the latest methods of protection from lightning, are treated in detail.

The student is made familiar with the manufacture and characteristics of the incandescent arc and many new forms of electric lamps; the selection of lamps for specific commercial duties; the principles underlying correct interior and exterior illumination; the manufacture of cables for underground work; and the materials used in overhead and conduit systems of distribution.

The proper arrangement, the type and the size of boilers, engines and dynamos in a central station for lighting and power purposes, are obtained by the study of typical plants in this country and abroad. Many problems involving the calculation of the wire and materials needed for the various system of distribution are given. These problems require for their solution a knowledge of the rules of the Underwriters' Association.

Text: Franklin's "Electric Lighting."

Senior Year—First and Second Term, 2 theoretical periods per week.

191. Electric Power Plants and Transmission. A study of the principles underlying the lay-out of power-house and sub-station machinery and circuits for high tension transmission and distribution systems, including the determination of the most economical size of conductors for such systems. The course includes numerous original and practical problems illustrating the principles.

Senior Year—Second and Third Term, 2 theoretical periods per week.

192. Telephones and Telegraphs. This subject deals with the applications of electricity to telephony and telegraphy, with the details and construction of the instruments, switchboards and line work. In this course are included a study of telephone receivers and transmitters; the multiple switchboard; common battery circuits; manual and automatic exchanges; traffic regulation; intercommunicating systems; line construction; the effects of self-inductance, capacity and other disturbing influences; location of

faults; simplex, duplex and quadruplex telegraphy; wireless telegraphy; and simultaneous telegraphy.

Text: Miller's "American Telephone Practice."

Senior Year—Second and Third Term, 2 theoretical periods per week.

193. Telephone Laboratory. The course consists of experimental work with telephone receivers, transmitters, induction coils, the effect of inductance, capacity, and resistance on the transmission of voice waves, and the operation of the magneto and common battery system of telephony.

Senior Year—Second and Third Term, 2 practical periods per week.

194. Electric Machine Design. This work includes the design of reactance coils, transformers, induction motors, alternator armatures, field windings and frames, and special problems in the transmission of power.

Senior Year—Third Term, 1 theoretical period and 8 practical periods per week.

195. Electric Railway Engineering. The student is made thoroughly familiar with the following topics relating to electric railway work; the power, capacity, arrangement and methods of installation of the engines and boilers; the type, method of control and disposition of the generators in the dynamo room; the proper arrangement of the switchboards and the instruments to be used; the line work, including the various trolley and conduit constructions; the method of laying the track, with the weight and bonding of the rails; the motor equipment and car wiring; the type, power and control of the motors and the requirements for special conditions; the applications of the storage battery; the cost of installation and operation of the power plant; the management of the plant; and the modifications required for high speed electric traction.

Text: Sheldon and Hausman's "Electric Traction and Transmission Engineering."

Senior Year—Third Term, 3 theoretical periods per week.

PHYSICS.

The physical lecture room and laboratory are located in the new engineering building, in rooms excellently adapted to the purpose. The Department is well supplied with apparatus for lecture room demonstrations and for students' individual laboratory work, and new pieces of apparatus are added to the equipment each year.

COURSES OFFERED.

200. MECHANICS AND SOUND. This course includes lectures, recitations, and demonstrations on mechanics, hydrostatics, molecular physics, and sound. A knowledge of plane trigonometry is required for entrance. Physics 203 must be taken at the same time.

Text: Carhart's "College Physics."

Sophomore Year—First Term, 3 theoretical periods per week.

Junior Year—First Term, 2 theoretical periods per week.

201. ELECTRICITY AND MAGNETISM. The elementary theory of electrical phenomena is carefully developed and considerable time is spent on the solution of problems illustrating the practical application of the various laws. Physics 204 must be taken at the same time.

Text: Franklin and Macnutt's "Electricity and Magnetism."

Sophomore Year—Second Term, 3 theoretical periods per week.

Junior Year—Second Term, 2 theoretical periods per week.

202. HEAT AND LIGHT. The general theory of the nature of heat is followed by detailed discussion of expansion, change of state, transmission and radiation of heat and the elements of thermodynamics. A careful study is made of the nature and propagation of light, the laws of reflection and refraction, dispersion, interference, etc. Physics 205 must be taken at the same time.

Text: Carhart's "College Physics."

Sophomore Year—Third Term, 3 theoretical periods per week.

Junior Year—Third Term, 2 theoretical periods per week.

203. MECHANICS AND SOUND. A laboratory course consisting of a series of quantitative experiments arranged to illustrate and verify the laws and principles considered in the class-room and to

develop in the student skill in manipulation and accuracy in making precise measurements. Physics 200 must be taken at the same time.

Sophomore and Junior Year—First Term, 4 practical periods per week.

204. Electricity and Magnetism. A laboratory course arranged to give the student a general knowledge of elementary electrical measurements and the practical application of the laws of magnetism. The course includes the study of magnetic fields and the measurement of current, electromotive force, resistance, capacity, etc. Physics 201 must be taken at the same time.

Sophomore and Junior Year—Second Term, 4 practical periods per week.

205. Heat and Light. A laboratory course including a number of experiments designed to illustrate and verify the laws and principles of heat and light. The experiments consist of the calibration of thermometers; measurement of specific heat, coefficient of expansion, heat of fusion, and vaporization; reflection with plane and spherical surfaces, refraction with prism and lenses, etc. Physics 202 must be taken at the same time.

Sophomore and Junior Year—Third Term, 4 practical periods per week.

206. Elementary Physics. The course consists of lectures, recitations and laboratory work in mechanics, sound, heat, light, electricity and magnetism. The student is required to solve a number of problems and his attention is directed to the practical applications of the principles studied. The laboratory work consists of the performance of experiments by a group of students under the direct supervision of the Instructor. The work includes only those experiments which have a direct bearing on the theoretical work and all students in the class are required to prepare original notes on the experiments performed by each group.

Text: Carhart and Chute's "Principles of Physics."

Sub-Freshman Year—4 theoretical periods and 1 practical period per week.

ENGLISH AND PUBLIC SPEAKING.

PROFESSOR RICHARDSON.

ASSOCIATE PROFESSOR REED.

MR. SCHULZ.

ENGLISH LANGUAGE AND LITERATURE.

Courses in the English language and literature are indispensable to complete training. There can be no more practical branch of study than that which teaches the student to avoid the errors of the vulgar, to regard the laws of correct usage and good taste, and to express his thoughts in a clear, easy, and effective manner. This can be accomplished only by systematic instruction which stresses precept, practice, and example. Consequently, all composition courses prescribe, in addition to rhetorical theory, extensive writing of themes and constant attention to the methods of the masters of English prose. This, together with a survey of English literature and a study of the life and art of its great writers, permits acquaintance with and inculcates habits of sound and painstaking scholarship.

But training is not complete without some knowledge of the noblest thoughts of the greatest minds. These are preserved in the masterpieces of literature. To study the classics is to come under their influence, so that the student learns to appreciate the loftier attitudes and ultimate end of all living.

COURSES OFFERED.

220. Composition, Rhetoric, and Readings in English Prose. This course aims to train the student in clear, economic, forceful self-expression by familiarizing him with the leading requisites of literary art and by requiring him to make constant application of them in constructive theme writing. Theory, however, is always kept subordinate to practice and choice example. Daily exercises and at least twelve essays are written during the year. Instructors correct themes in detail, and after the student's revision place on file; they also make appointments for conferences. Freshness and interest are maintained by the variety of subjects assigned and the careful coordination of composition with the stu-

dent's other academic interests. In connection with the study of narratives special attention is given to the short story and letter writing.

Texts: Scott and Denney's "Paragraph Writing," and Scott and Zeitlin's "College Readings in English Prose."

Freshman Year—4 theoretical periods per week.

221. Composition and a Survey of English Literature. Practical work in composition done in connection with a general survey of the development of English literature. Historical outline given by lectures. Intensive study in class of six or more complete masterpieces. Collateral readings in classical, technical, and current literature. Critiques and reports on literature read and studied, equivalent to twelve or more regular themes.

Texts: Long's "English Literature," and Newcomer and Andrew's "Twelve Centuries of English Poetry and Prose."

Sophomore Year—1 theoretical period and 2 practical periods per week.

222. Advanced Scientific Composition. The purpose of this course is the examination and analysis of such literature as pertains to the various technical courses of the College, with the view of producing work of a similar character. The preparation of at least a half-dozen essays on subjects within the student's major field is required of each member of the class. The technical departments cooperate with the English Department in offering this course.

Junior Year—First and Second Term, 1 theoretical period and 2 practical periods per week; Third Term, 1 theoretical period per week.

223. The Novel and the Essay. Prerequisite, English 220 and 221. Required in 1917-18 of General Science students; elective for others by permission.

Each student will read a number of works of fiction and prepare written critiques. A few model novels are studied critically in class. Lectures on the historical development of the English novel.

Reading of the leading nineteenth century essayists; lectures and reports.

Junior Year—2 theoretical periods per week.

224. Survey of American Literature. History of the English Language. Prerequisite, English 220 and 221. Required in 1918-19 of General Science students; elective for others by permission.

Survey of American literature: Lectures on historical periods, determinative movements, and representative authors. Critical reading of masterpieces. Essays.

History of the English language: The development of the language is traced by means of illustrative specimens. The history of spelling and pronunciation, the changes in the meanings of words, and the origin of idioms receive attention.

Junior Year—2 theoretical periods per week.

225. Special Composition. Special themes illustrating the principles of debate, the oration and the short story.

Senior Year—First and Second Term, 2 practical periods per week; Third Term, 1 theoretical period per week.

226. The Drama. Prerequisite, English 220 and 221. Required in 1917-18 of General Science students, and of other Seniors not electing English 225.

Origin of the English drama: Early Popular Plays; Predecessors of Shakespeare; Shakespeare and his Contemporaries; Restoration and Eighteenth Century drama; and Modern drama. Lectures on the history, and critical study of the plays, of each period. Extensive collateral reading. Essays.

Senior Year—First and Second Term, 2 practical periods per week; 1 theoretical period per week.

227. Poetry. Prerequisite, English 220 and 221. Required in 1918-19 of General Science students, and of other Seniors not electing English 225.

Analytic and interpretative study of Chaucer, Spenser, and Milton; the poetry of the Eighteen Century; and Romantic and Victorian poets. Lectures on the history of English poetry, with special attention given to the rise of Romanticism. Collateral assignments. Critiques.

Senior Year—First and Second Term, 2 practical periods per week; Third Term, 1 theoretical period per week.

228. Special English. Subject to be selected after consultation with the head of the Department. Elective for students in General Science Course.

Senior Year—First Term, 2 theoretical periods per week; Second Term, 4 theoretical periods per week; Third Term, 3 theoretical periods per week.

229. English. Review of Grammar and Composition based upon work taken in Course.

First Year—First and Second Term, 4 theoretical periods per week; Third Term, 3 theoretical periods per week.

230. Farm Literature. A reading course in farm periodicals and other agricultural literature, with instruction in the taking and systematization of notes.

First Year—2 practical periods per week.

231. Rhetoric, Composition and Literature. A study of the principles of rhetoric and composition, together with a study of the history of literature and selected works of English and American authors. Composition is based upon experience and literature studied.

Sub-Freshman Year—4 theoretical and 2 practical periods per week.

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PUBLIC SPEAKING.

The work in public speaking is begun with easy lessons in elocution; and this is continued until the student has acquired a mastery of vocal expression, and a pleasing and forceful delivery. The student is then required to deliver both extempore and prepared speeches and debates, covering a wide range of subjects, in this way not only securing practice in delivery, but also developing the power of logical thought.

COURSES OFFERED.

232. Elements of Public Speaking. Work consists of reading, declamation and original speeches.

Freshman Year—2 practical periods per week.

233. Public Speaking. Lectures on ancient and modern orators, with readings and declamations from their orations. Ex-

tempore speeches. Original orations on subjects requiring careful and intelligent research work. Debates.

Sophomore Year—2 practical periods per week.

234. PUBLIC SPEAKING. Writing and delivering original speeches on subjects especially adapted to the future requirements in the vocation of the student. Debates on current subjects.

Junior Year—2 practical periods per week.

235. PUBLIC SPEAKING. Special course for students in the General Science Course. Elective.

Senior Year—First Term, 2 theoretical periods per week; Second Term, 4 theoretical periods per week; Third Term, 3 theoretical periods per week.

236. PUBLIC SPEAKING. Instruction and practice in declamation and delivery of original compositions.

First Year—2 practical periods per week.

ENTOMOLOGY AND ZOOLOGY.

PROFESSOR SYMONS.
PROFESSOR CORY.
MR. PIERSON.
MR. CALE.

Instruction is given in this Department with a view first, to giving the student the general knowledge of invertebrate and vertebrate zoology, which is necessary as a foundation science for an agricultural education; second, to fit the student in elementary and advanced entomology, both economic and systematic, so that he may pursue this specialty after graduation. A course in economic entomology and zoology is also given to provide those students who are specializing in any of the allied agricultural sciences, with the information which is essential to their ideal development.

Students who intend to enter the medical profession or work in public health and sanitation will find in the Biological Course the work which will give them the best possible preparation for those professions.

Students wishing to take advanced work in invertebrate zoology are advised to select some subject in entomology. As the State and Experiment Station entomological work is conducted through this Department, there are special advantages for students in applied entomology. Facilities for specializing in apiculture are now available.

The reference library is unusually complete, containing in addition to the standard works, a majority of the principal entomological and zoological publications. The laboratory is supplied with a large collection of insects for the use of students, and is well equipped with microscopes and other apparatus necessary for practical work in entomology and zoology.

A greenhouse with an aquarium for insect breeding and investigation, together with a screen insectary adjacent to the laboratories, adds to the opportunity for advanced work in zoology and entomology. A greenhouse 50 x 20 in the new range of houses has been set aside for entomological work.

A dark room and equipment for laboratory and outdoor photography, and for photomicrography is an important adjunct in carrying on the work.

The spray laboratory is well equipped with machinery, accessories and insecticides.

COURSES OFFERED.

240. General Zoology. This course is offered to all students taking agriculture and allied sciences, and is introductory to all other work in this Department. Laboratory work consists of a detailed study of form and function of type species. The theoretical study consists of lectures and recitations based on Hegner's College Zoology.

Text-book: Hegner's "College Zoology."

Freshman Year—First and Second Term, 2 theoretical and 4 practical periods per week.

241. Advanced Zoology. This course is required of students taking the Biological Course. The time will be divided equally between normal histology and embryology.

Sophomore Year—2 theoretical and 4 practical periods per week.

242. General Entomology. This course consists of a study of insects, their classification, structure and relation to man. The practical work will consist of laboratory studies of the structures of typical forms, and a study in the field of the habits of insects, particularly those which are injurious to crops.

As an aid to this study, the student is required to make a collection of the more common insects which appear in the Spring.

Sophomore Year—Third Term, 2 theoretical and 4 practical periods per week.

243. Economic Zoology. The economic relations of animals to man and other animals is given careful consideration in this course which is required of Biological students.

Junior Year—First Term, 1 theoretical period and 4 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week.

244. Economic Entomology. This course will embrace a detailed study of the life histories of insects of economic importance and the most approved means of control. Practical work will be given in the preparation and application of insecticides and the operation of spraying machinery, of which the Department has a large assortment.

Junior Year—Second Term, 3 theoretical and 2 practical periods per week; Third Term, 1 theoretical period and 4 practical periods per week.

245. Entomology. This course is required of students specializing in entomology. It consists of a study of morphology and classification of insects, their biology and inter-relations.

Junior Year—Second Term, 1 theoretical period and 4 practical periods per week; Third Term, 2 theoretical and 6 practical periods per week.

246. Advanced Entomology. Senior students specializing in entomology will be required to take this course which will consist of insect anatomy, histology, physiology, taxonomy, ecology, and distribution. Experimental and biologic methods, collection and recording of data, entomological literature and insect delineation will be given careful attention.

Senior Year—7 theoretical and 12 practical periods per week.

247. Animal Parasites. This course is designed specially for students specializing in animal husbandry. The course involves a discussion of the life history and habits of the more important internal and external parasites of domestic animals. It also includes a study of the treatment employed in the control of these pests.

Senior Year—Second Term, 2 theoretical and 4 practical periods per week.

248. Entomological Research. Independent research on some definite problem in entomology, the results of which are usually incorporated in the graduation thesis.

Senior Year—8 practical periods per week.

249. Economic Zoology and Entomology. This course consists of lectures, recitations and laboratory and field work, designed to familiarize the student with the habits, life history, and essential structure from the classification standpoint, and methods of encouraging the beneficial and controlling the injurious forms on the farm. Special emphasis will be placed on insects, amphibians, reptiles and birds.

First Year—Second and Third Term, 2 theoretical and 2 practical periods per week.

250. Sprays and Spraying. A critical study will be made of spraying apparatus, accessories and spray materials in the Second Term and the knowledge thus gained will be applied in actual spraying operations in the Third Term.

Second Year—Second Term, 1 theoretical period and two practical periods per week; Third Term, 4 practical periods per week.

HORTICULTURE.

PROFESSOR SYMONS.

PROFESSOR BECKENSTRATER.

DR. BESLEY.

PROFESSOR ANSPON.

PROFESSOR STODDARD.

MR. SHAEFFER.

Recognizing the great importance of every phase of this subject in the State, the Department of Horticulture is offering instruction to students desiring to specialize in either pomology, vegetable culture or landscape gardening and floriculture. The courses in this subject have been revised, providing for general courses in all phases of horticulture during the Freshman and Sophomore years and permitting them to specialize in any of the above subjects in the Junior and Senior years.

The arrangement of the courses is, of necessity, subject to such adjustment as will advance the best interests of the students. The object in each course will be to give practical and theoretical training in fruit growing, truck farming and commercial landscape gardening and floriculture. Under the present arrangement the specialists in each subject will have greater opportunity to keep familiar with the progress of their work through the practical demonstration and experimental work in the State.

The equipment of the Department is being steadily increased and the orchards, gardens and greenhouses of College and Experiment Station afford unlimited opportunities for practical observation. In addition, the students of each course will be expected to take trips to selected commercial orchards, truck farms, greenhouses and markets.

The Department of Horticulture offers a four-year course leading to the degree of Bachelor of Science, and electives in the two-year Course in Agriculture for proficiency in which a certificate is awarded.

POMOLOGY.

COURSES OFFERED.

260. Principles of Pomology. This is an introductory course which deals with the principles of fruit growing and covers the methods of propagation, planting, cultivation and pruning.

Sophomore Year—First Term, 1 theoretical period and 4 practical periods per week; Third Term, 2 theoretical periods and 2 practical periods per week.

261. Commercial Pomology. This course considers the harvesting, packing, storing and marketing of fruits. Special stress is given to transportation and market problems.

Junior Year—First Term, 2 theoretical and 4 practical periods per week.

262. Fruit Judging. In this course the student is given practical exercises in judging fruit and selecting fruits for exhibition purposes. The standards and principles governing the judging of fruits are applied.

Junior Year—First and Second Term, 2 practical periods per week.

263. Practical Pomology. A study of the orchard sites, soils, varieties and planting plans for the orchard and garden, cultivation, cover crops, companion crops, fertilizers and pruning as practiced in commercial fruit plantations.

Junior Year—Second Term, 2 theoretical and 4 practical periods per week; Third Term, 4 practical periods per week.

264. Practical Small Fruit Culture. Practical directions for the production and handling of strawberries, grapes and bush fruits for home use and market.

Junior Year—Third Term, 2 theoretical and 2 practical periods per week.

265. Systematic Pomology. This course embraces a study of the evolution and relationship of the economical fruits. It includes exercises in describing and identifying the leading commercial varieties.

Senior Year—First Term, 2 theoretical and 4 practical periods per week; Second Term, 1 theoretical period and 4 practical periods per week.

266. Advanced Pomology. Special problems in adaptation, propagation, cultivation, pruning, harvesting and marketing as they arise in commercial orchards will be discussed. The origin and development of the various fruit sections and industries will also be considered and a study made of the men interested and the methods which they use. In this course it may be necessary at times for the student to visit orchards in other sections of the State.

Senior Year—First and Third Term, 2 theoretical and 4 practical periods per week.

267. Nut Culture and Citrus and Sub-Tropical Fruits. This course is designed to cover these subjects in a general way.

Senior Year—Second Term, 3 theoretical periods per week.

268. Plant Breeding. A general course in the science and art of plant breeding. Observed factors in organic evolution, variation and heredity are considered in so far as they have a bearing upon this subject. The discussion of the various methods of breeding and improvements are accompanied by practice in the orchard, greenhouses and gardens.

Senior Year—Second Term, 3 theoretical and 2 practical periods per week; Third Term, 4 practical periods per week.

269. Research and Thesis. This course is given to test and develop the student's power of observation and initiative. The work will be arranged with each student individually and the results will be written up in the form of a thesis. Upon approval, the student may elect other courses so far as they are available in place of a part or all of the thesis work.

Senior Year—First and Third Term, 4 practical periods per week; Second Term, 4 or 6 practical periods per week.

270. Elementary Pomology. An introductory course dealing with the principles of the subject. It is intended for all students in the two-year course and it is prerequisite to the later courses.

First Year—First Term, 2 theoretical and 4 practical periods per week.

271. Practical Fruit Growing. This course is designed for those students who desire to devote all their allotted time in horticulture to pomology. The entire field will be covered and the

subjects treated in all the other courses in pomology will be included herein so far as the allotted time and the capacity of the student will permit. Elective.

First and Third Term, 4 theoretical and 8 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week.

272. Commercial Pomology. In this course the methods of gathering, packing and marketing of the various fruits are taken up. Market problems, transportation and shipping associations receive special attention. Advantage is taken of the materials available at this time to study the classification and identification of the leading commercial varieties of apples. The student is also given practical exercises in fruit judging and the selection of fruits for exhibition purposes. Elective.

Second Year—First Term, 2 theoretical and 4 practical periods per week.

273. Practical Fruit Growing. This course is a continuation of course 270 and deals with orchard sites, soils, varieties, companion crops, fertilizers and pruning as practiced in both commercial and home orchards. Elective.

Second Year—Second Term, 1 theoretical period and 2 practical periods per week.

274. Small Fruits. In this course the production of strawberries, bush fruits and grapes is considered. The methods of propagation, selection of sites, soils, pruning, training and cultivation are discussed. Elective.

Second Year—Third Term, 2 theoretical and 4 practical periods per week.

VEGETABLE GARDENING.

COURSES OFFERED.

280. Home Vegetable Gardening. This course includes the general principles of vegetable gardening; the production of vegetables for home use; the location, planning and management of the garden. The laboratory work includes a study of vegetable

seeds, germination tests, growing early plants and their care in the greenhouses and cold frames until they are planted in the "Farmers Garden." Here the students assume full charge of the plantings and keep records of the work done on each vegetable.

Sophomore and Senior Year—Second Term, 2 theoretical and 4 practical periods per week; Third Term, 1 theoretical period and 4 practical periods per week.

281. Vegetable Forcing. A course which treats of the principles and practice of forcing vegetables in greenhouses, hotbeds and cold-frames. All of the vegetables that are used for forcing are considered, and also their grading, packing and marketing. A definite area is allotted to each student who is then required to put into practice the knowledge gained in the classroom by planning, planting and managing the plot throughout the entire forcing season.

Junior Year—First and Second Term, 2 theoretical and 4 practical periods per week; Third Term, 4 practical periods per week.

282. Vegetable Gardening Literature. A course relating to the sources of literature upon vegetable growing; a study of current literature on vegetable gardening and the work with vegetables being carried on at the various experiment stations.

Junior Year—First Term, 2 practical periods per week; Second Term, 1 theoretical period per week.

283. Commercial Vegetable Gardening. A study of the principles of vegetable growing as applied in commercial production. The course includes the selection of a location, and the equipment, construction and management of hotbeds and cold-frames; growing early vegetable plants; field planting; rotation of crops; and irrigation. Cultural directions are given for all the vegetables, including their requirements, varieties, tillage, enemies, grading, packing and marketing. Each student is allotted definite areas in the field and greenhouses and is required to plan, plant and manage them throughout the year. Trips are taken to markets and vegetable farms.

Senior Year—First Term, 1 theoretical period and 4 practical periods per week; Second and Third Term, 2 theoretical and 4 practical periods per week.

284. Vegetable Growing for the Canning Industry. A course dealing with the principal vegetables grown for commercial canning; cultural directions for these crops; and the home canning of surplus products. Practical work will consist in canning small amounts of vegetables in tin cans and glass jars.

Senior Year—First Term, 1 theoretical period and 2 practical periods per week.

285. Systematic Olericulture. This course includes a systematic and descriptive study of the leading varieties of the most important vegetables, their origin and botany; adaptation of the various varieties to different cultural and market conditions; judging and exhibition work.

Senior Year—First and Third Term, 1 theoretical period and 4 practical periods per week; Second Term, 4 practical periods per week.

286. Market Gardening. This course considers essentially the same problems in commercial vegetable growing as contained in course 283 but in a briefer way. Cultural directions are given for the most important crops. The practical work includes the growing of early vegetable plants under glass and field planting of the early vegetables. The students assume full charge of the plantings.

Senior Year—Third Term, 2 theoretical and 4 practical periods per week.

287. Research and Thesis. The prime object of this work is to test the student's power of observation and initiative. Each student will be required to select some special line of research in vegetable gardening and submit the same to the head of the Department for approval not later than April 1st of the Junior year. The results must be written up in the thesis which is required for graduation.

Senior Year—First Term, 4 practical periods per week; Second Term, 4 or 6 practical periods per week; Third Term, 1 theoretical period and 4 practical periods per week.

288. Home Vegetable Gardening. The general principles of vegetable gardening as applied to the growing of vegetables for home use. The laboratory work includes a study of vegetable

seeds, seed testing, seed sowing, transplanting and the care of plants in the greenhouses and cold-frames. The students are required to plan, plant and manage a large home garden until the end of the term.

First Year—Second Term, 1 theoretical period and 2 practical periods per week; Third Term, 2 theoretical periods and 4 practical periods per week.

289. Commercial Vegetable Growing. A study of the principles of vegetable gardening as applied to the growing of vegetables for market and for canning. The course includes the construction and management of hotbeds and cold-frames, growing early vegetable plants, soil preparation, sowing and planting, cultivation, harvesting, grading, packing, marketing, canning and storage. Each student is allotted a definite area and is required to plan, plant and manage it. Elective.

Second Year—First Term, 1 theoretical period and 2 practical periods per week; Third Term, 2 theoretical and 4 practical periods per week.

290. Vegetable Forcing. A course which deals with the principles and practice of forcing vegetables in greenhouses, hotbeds and cold-frames. The most important forcing crops are considered. Each student is assigned a definite plot in the greenhouses and frames, and is required to plan, plant and manage it. Elective.

Second Year—First and Second Term, 1 theoretical period and 2 practical periods per week.

291. Advanced Vegetable Gardening. Second year students who elect to spend the entire time scheduled for horticulture in vegetable gardening, will be given a course which includes the subjects considered under courses 289 and 290, but the problems arising in the different phases of commercial vegetable growing will be treated in a more thorough manner. It also includes a systematic study of some of the more important commercial varieties. Trips will be taken to markets and vegetable farms. Elective.

Second Year—First and Third Term, 4 theoretical and 8 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week.

LANDSCAPE GARDENING AND FLORICULTURE.

COURSES OFFERED.

300. PRINCIPLES OF LANDSCAPE GARDENING. This course has been arranged for the purpose of giving the student a broad knowledge of the various types of landscape gardening and the principles which underlie them. Lectures and field trips.

Sophomore Year—Second Term, 1 theoretical period and 2 practical periods per week.

301. ORNAMENTATION OF HOME GROUNDS. A continuation of course 300, giving special attention to the improvement of home grounds. Field trips and reports.

Sophomore Year—Third Term, 4 practical periods per week.

302. HISTORY OF LANDSCAPE GARDENING. A reference course dealing with the literature and the different stages in the development of the art. Collateral reading and reports.

Junior Year—First Term, 2 practical periods per week.

303. FLORICULTURE. Preparation of soils, potting, watering, ventilating and fumigating as applied to greenhouse crops. Lectures, practical work in greenhouses, field trips and reports.

Junior Year—First Term, 2 theoretical and 4 practical periods per week.

304. COMMERCIAL FLORICULTURE. Greenhouse plants and flowers; culture; and methods of handling and marketing for wholesale and retail markets. Lectures, practical work, trips to leading growers in this section, and reports.

Junior Year—Second Term, 4 theoretical and 4 practical periods per week.

305. COMMERCIAL FLORICULTURE. Continuation of course 304.

Junior Year—Third Term, 2 theoretical and 6 practical periods per week.

306. GREENHOUSE CONSTRUCTION. Types of forcing structures, their location, arrangement and construction; cost; methods of heating and ventilating. Lectures, drawing plans, specifications, and practical work in construction.

Senior Year—First Term, 2 theoretical and 4 practical periods per week.

307. Landscape Design. This course deals with the composition of gardens, private estates and related problems. Simple problems involving the use of topographic surveys, drainage and grading plans. Lectures, drafting and collateral reading.

Senior Year—First Term, 2 theoretical and 4 practical periods per week.

308. Civic Art. A study of the principles of city planning and their application to city, town and rural improvement. Lectures and collateral reading.

Senior Year—First Term, 2 theoretical periods per week.

309. Landscape Design. Continuation of course 307. More complex problems are studied, including public parks and playgrounds. Planting plans and designs.

Senior Year—Second Term, 2 theoretical and 4 practical periods per week.

310. Landscape Practice. Grading plans and construction drawings, estimates, specifications and contracts.

Senior Year—Second Term, 4 practical periods per week; Third Term, 1 theoretical period and 4 practical periods per week.

311. Plant Materials. Trees, shrubs and herbaceous plants. Their characters, soil requirements, arrangement and planting.

Senior Year—Second Term, 2 theoretical and 2 practical periods per week.

312. Floral Decoration. Plants and cut flowers. Their arrangement in baskets, designs, bouquets, table and house decorations.

Senior Year—Second Term, 1 theoretical period and 4 practical periods per week.

313. Garden Flowers. Annuals, bulbous plants and herbaceous perennials grown in the home garden for cut flowers and ornamental planting.

Senior Year—Third Term, 2 theoretical and 4 practical periods per week.

314. Tree Repair. Methods of treating trees and shrubs to control attacks of insect and fungus enemies and to repair injury due to them. Technical details in pruning, bracing, treatment of wounds, and cavity filling.

Senior Year—Third Term, 1 theoretical period and 4 practical periods per week.

315. Amateur Floriculture. Plants and flowers for the window and home garden, soils, fertilizers, containers, and the potting and shifting of plants.

Senior Year—Third Term, 2 theoretical and 4 practical periods per week.

316. Plant Propagation. This course takes up seedage, layering, cuttings, buds and grafts. Special attention is given to ornamental plants for home decoration.

First Year—Second Term, 2 theoretical and 4 practical periods per week.

317. Floriculture. This course takes up the various phases of greenhouse management, and includes preparation of soils, potting, watering, and ventilating. Elective.

Second Year—First Term, 2 theoretical and 4 practical periods per week.

318. Principles of Landscape Gardening. A study of the various styles of landscape gardening and the principles which underlie them. Their application to the ornamentation of home grounds is also considered. Elective.

Second Year—First Term, 2 theoretical and 4 practical periods per week.

319. Commercial Crops. Methods of growing and marketing plants and cut flowers for wholesale and retail markets. Elective.

Second Year—Second Term, 1 theoretical period and 2 practical periods per week.

320. Ornamentation of Home Grounds. This course takes up the principles of landscape gardening and their application to the home grounds. Elective.

Second Year—Second Term, 1 theoretical period and 2 practical periods per week.

321. Commercial Crops. Continuation of course 319. Elective.

Second Year—Third Term, 2 theoretical and 4 practical periods per week.

322. Garden Flowers. Annuals, bulbous plants and herbaceous perennials suitable to planting in the home garden for cut flowers and ornamentation. Elective.

Second Year—Third Term, 2 theoretical and 4 practical periods per week.

FORESTRY.

The instruction in forestry is planned to give to the student, who is fitting himself to take up the practical problems of farm management, a sufficient knowledge of the principles of forestry to enable him to apply to the wood lot or timber tract, which is a part of practically every farm, the same degree of intelligent direction which he is prepared to give to the tilled lands and thus obtain equally satisfactory results.

COURSE OFFERED.

320. Farm Forestry. This course includes forest botany, wood-management, measurement, valuation and utilization of forest crops, fire protection, nursery practice and tree planting. Lectures and field work.

Senior and Second Year—Third Term, 2 theoretical and 4 practical periods per week.

LANGUAGES.

PROFESSOR SPENCE.
MR. KRAMER.

The Department of Languages embraces the study of three branches: Latin, German and French. All students are required to take the courses in German or French. Students may elect to take Latin in the Freshman year in place of history, provided that they have completed the work outlined for the Sub-Freshman Class or its equivalent.

The course of study in Latin is given with two ends in view—first, to train the mind into accurate and close methods of reasoning; second, to give the student a more thorough and comprehensive knowledge of his own language than he could otherwise acquire. Special attention is paid to Latin forms and terminations and to the derivation of English words from Latin roots.

So large a proportion of modern scientific literature is in German and French that a reading knowledge of these languages has become almost essential to the student pursuing advanced courses in the various spheres of scientific research. Instruction in these branches is given, therefore, to enable the student to translate intelligently the works of French and German masters in the domain of science, for, frequently there are no English versions of their works. As the student becomes more familiar with foreign scientific terms and construction, he is required to translate treatises bearing upon the special line of work which he may be pursuing.

LATIN.

COURSES OFFERED.

340. Syntax and Translation. Reading of Caesar and Sallust with prose composition selected from the text read.

Text-books: Smith's "Latin Lessons," Harper and Tolman's "Commentaries of Caesar," and Scudder's "Sallust."

Freshman Year—3 theoretical periods per week.

341. Mythology, Translation and Literature. Reading of Virgil and Horace with lectures on mythology and Latin literature. Elective.

Text-books: Selected texts.

Sophomore Year—First and Second Term, 5 theoretical periods per week; Third Term, 4 theoretical periods per week.

342. Elementary Latin. Elective.

Sub-Freshman Year—3 theoretical periods per week.

GERMAN.

COURSES OFFERED.

360. GRAMMAR AND CONVERSATION.

Text-book: Bacon's "German Grammar."

Freshman Year—3 theoretical periods per week.

361. TRANSLATION.

Text-books selected from the following: Hauff's "Das Kalte Herz," Schiller's "Der Neffe als Onkel," Wildenbruch's "Das Edle Blut" and "Der Letzte," Hillern's "Hoher als die Kirche," Grandgent's "Ali Baba and the Forty Thieves," Sybel's "Die Erhebung Europas," Walther's "Algemeine Meereskunde," Brant and Day's "Scientific German," Wallentin's "Grundzuge der Naturlehre," Moser's "Der Bibliothekar."

Sophomore Year—3 theoretical periods per week.

362. TRANSLATION. Selected readings from various literary and scientific texts and periodicals.

Junior Year—3 theoretical periods per week.

Senior Year—3 theoretical periods per week.

363. GRAMMAR AND CONVERSATION.

Text-book: Bacon's "German Grammar."

Sub-Freshman Year—4 theoretical periods and 1 practical period per week.

FRENCH.

COURSES OFFERED.

380. GRAMMAR AND COMPOSITION.

Text-book: Chardenal's "Complete French Course" (Revised), Aldrich & Foster's "Elementary French" and "French Reader," Super's "French Reader," and selected texts.

Freshman Year—3 theoretical periods per week.

381. TRANSLATION. Selections from standard authors.

Sophomore Year—3 theoretical periods per week.

382. TRANSLATION. Selected texts. Readings from various scientific texts and periodicals.

Junior Year—3 theoretical periods per week.

Senior Year—3 theoretical periods per week.

383. Grammar and Composition.

Text-book: Chardenal's "Complete French Course" (Revised).

Sub-Freshman Year—4 theoretical periods and 1 practical period per week.

MATHEMATICS.

PROFESSOR HARRISON.

MR. WARTHEN.

Mathematics is the basis upon which scientific information rests. A knowledge of the study is necessary, as much from the utilitarian point of view as from the mental training its acquisition gives. Its importance as a factor in our College course takes its rise from the former consideration. All instruction in this work is with a view to the equipping of students for the more practical work soon to follow.

The class work in mathematics in the several courses consists of arithmetic, accounting, algebra, geometry (plane and solid), trigonometry, analytic geometry, differential and integral calculus, and their application to mechanics, engineering, physics and surveying.

COURSES OFFERED.

400. Trigonometry. Deduction of formulas and practical applications of same in the solution of right and oblique triangles, etc.

Text-book: Wentworth.

Freshman Year—First Term, 5 theoretical periods per week; Second Term, 2 theoretical periods per week.

401. Advanced Algebra. Elementary theory of equations, partial fractions, etc.

Text-book: Taylor.

Freshman Year—Second Term, 3 theoretical periods per week.

402. Analytical Geometry. Geometry of two and three dimensions, loci of general equations of second order, higher plane curves, etc.

Text-book: Riggs.

Freshman Year—Third Term, 5 theoretical periods per week.

Sophomore Year—First Term, 5 theoretical periods per week.

403. Calculus. A discussion of the methods used in differentiation and integration, and the application of these methods in determining maxima and minima, areas, volumes, moments of inertia, etc.

Text-book: Bowser.

Sophomore Year—Second Term, 5 theoretical periods per week; Third Term, 4 theoretical periods per week.

Junior Year—First Term, 5 theoretical periods per week.

404. Farm Accounts. Brief course.

First Year—First Term, 2 theoretical periods per week.

405. Algebra. A thorough course in elementary algebra.

Text-book: Wentworth—Smith.

Sub-Freshman Year—4 theoretical periods per week.

406. Plane Geometry. Books one to five, inclusive.

Text-book: Wentworth.

Sub-Freshman Year—First and Second Term, 4 theoretical periods per week.

407. Solid Geometry. Books six to eight, inclusive, with selected practical problems. Elective .

Text-book: Wentworth—Smith.

Sub-Freshman Year—Third Term, 4 theoretical periods per week.

408. Farm Arithmetic. Theory and practice. Elective.

Sub-Freshman Year—Third Term, 4 theoretical periods per week.

MECHANICAL ENGINEERING.

PROFESSOR GWINNER.

ASSOCIATE PROFESSOR CRISP.

MR. WARTHEN.

MR. KEAT.

This Department offers a Course in Mechanical Engineering leading to the degree of Bachelor of Science in Mechanical Engineering. The list of all subjects required to be completed to obtain

this degree is given on page 113. It prepares young men to design and construct machinery, to superintend engineering establishments, to become superintendents of construction and to teach mechanical engineering and manual training. For degree of Mechanical Engineer see page 128.

The record of its graduates shows that the course is equipping them for immediate usefulness in the technical field.

Instruction is given by means of lectures and recitations, accompanied by a large amount of practice in the drafting rooms, shops and experimental laboratory.

The program of the Department is arranged to embody the two-fold belief that a thorough training is best secured by a study of the practical application of the principles involved, as well as of the principles.

EQUIPMENT. The Mechanical Engineering Laboratories are situated in the engineering building, which contains the wood-working and machine shops, drafting and lecture rooms, foundry and blacksmith shops as well as the College power plant.

The wood-working shop contains accommodations for bench work and wood turning. The power machinery in this shop is a band and universal circular saw, five 12-inch turning lathes, one 16-inch by 10-foot pattern maker's lathe, a grindstone, wood trimmer, 26-inch wood planer and universal tool grinder.

In the forge shops are sixteen power forges, two hand forges and a pressure fan and exhauster for keeping the shop free of smoke. There is a full assortment of smith's tools for each forge.

The foundry is equipped with an iron cupola, which melts 1,200 pounds of iron per hour, a brass furnace, one core-oven and the necessary flasks and tools.

The machine shop equipment consists of one 10-inch speed lathe, one 22-inch engine-lathe with compound rest, one 12-inch combined foot and power lathe, two 14-inch engine-lathes, one 24-inch drill press, one No. 4 emery tool grinder, one No. 1½ universal milling machine, and an assortment of vises, taps, dies, pipe-tools and measuring instruments.

The machinery of the pattern and machine shops is driven by a 9 by 14-inch automatic cut off, high speed engine, built by members

of the Junior and Senior mechanical engineering classes, after the standard design of the Atlas engine. An 8 by 12-inch engine drives the machinery of the blacksmith shop and foundry. It was presented to the College by the City of Baltimore, and secured through the efforts of Rear-Admiral John D. Ford, United States Navy, retired.

The experimental laboratory contains: A hundred thousand pound Riehle combined hand and power testing machine for making tensile, compression, shearing and transverse tests on various kinds of materials, turbo-generator set, consisting of a Curtis steam turbine and thirty-five K. W. General Electric compound wound generator for making steam and electric efficiency tests. This set is connected with the general lighting system of the College so that any time it may be tested to its capacity. It may also be used for lighting purposes if necessary. A cross compound condensing Corliss engine of fifty horse-power, equipped with brake, indicators, relief valves, reducing motion, steam and vacuum gauges, and speed indicator, gives ample opportunity for steam consumption and brake tests. This is connected with the shops, so that any time it may be switched on and drive them. The College power plant with its vacuum heating system, three one-hundred horse-power return tubular boilers, and two electric generating units offer unexcelled opportunities for experimental work. A six horse-power, four-cycle gasoline engine equipped with prony brake permits the making of tests in gas engineering.

The three drafting rooms are well equipped for practical work. Two of these are used by the Junior and Senior classes, each student being provided with a separate desk. The third room is used jointly by the Freshman and Sophomore students and contains fifteen drawing tables, accommodating about ninety students.

Engineering students are to provide themselves with approved drawing outfit, materials and book; the cost of which during the Freshman year amounts to about $15.00. The cost to other students taking mechanical drawing is about $5.00. The College does not furnish these, but they are purchased by the student and are his property.

The combined blue-print and dark room with its commodious printing-frames affords splendid opportunities for sun-printing, which is so useful to engineering students.

Tours of Inspection. The proximity of the College to Baltimore, Washington and Philadelphia, with their great industrial enterprises, offers unexcelled opportunities to engineering students to acquaint themselves practically with what is being done in modern engineering construction. Upon trips of inspection an instructor accompanies the class and explains the different processes, plants and machines.

COURSES OFFERED.

420. Freehand Drawing. Elementary practice; lettering; exercises in sketching, both in pencil outline and pencil rendering; line drawing, composition, proportion, and comparative measurements; exercises in sketching of technical objects; and pen and ink shading. Plates upon completion are bound and properly titled.

Freshman Year—First Term, 4 practical periods per week.

421. Mechanical Drawing. Practice in plain lettering, use of instruments, projection and simple working drawings, the plates upon completion being enclosed in covers properly titled by the students. Instruction is given in this subject during the Junior year to students in the Agricultural and Horticultural Courses and is modified to meet their needs.

Text-book: Tracy's "Mechanical Drawing."

Freshman Year—4 practical periods per week.

Junior Year—First Term, 4 practical periods per week.

422. Technical Instruction. Explanation of the reading of mechanical drawings; the proper cutting angles, care and adjustment of carpenter tools; relative strength of wood joints; wood, its shrinking and warping, and how to correct and prevent. Drill in problems in arithmetic, algebra and drawing by notes and lectures.

Text-book: Goss' "Bench Work in Wood."

Freshman Year—First Term, 2 theoretical periods per week.

423. Wood Work. During the First Term is taught the use and care of bench tools, exercise in sawing, mortising, tenoning and laying out work from blue-prints. The Second Term is devoted

to projects involving construction, decoration and wood-turning. During the Third Term the principles and process of pattern-making are taught, together with enough foundry work to demonstrate the uses of pattern-making. Instruction in this course is given to the agricultural and horticultural students in the Junior year and covers types of wood work used on the farm.

Freshman Year—First Term, 6 practical periods per week; Second and Third Term, 4 practical periods per week.

Junior Year—Second Term, 4 practical periods per week.

424. Descriptive Geometry. Detailing of machinery and drawing to scale from blue-prints. Tracing and blue-printing, and representation of flat and round surfaces by ink shading. Its relation to mechanical drawing and the solution of such problems relating to magnitudes in space as bear directly upon those which present themselves to civil, electrical and mechanical engineers.

Text-books: Anthony and Ashley's "Descriptive Geometry," and Notes on Empirical Design.

Sophomore Year—First Term, 4 practical periods per week; Second Term, 3 theoretical and 4 practical periods per week; Third Term, 2 theoretical and 2 practical periods per week.

425. Blacksmithing. The making of the fire and how to keep it in order. The operations of drawing-out, upsetting and bending of iron and steel, including the calculations of stock for bent shapes. Welding. Construction of steel tools for use in the machine shop, including tool dressing and tempering. Annealing.

Sophomore and Junior Year—First and Second Term, 4 practical periods per week.

426. Technical Mechanics. Elementary principles of applied mechanics, calculations of gear and pulley trains, bent levers, calculation of belt lengths, lacing belts, the suction pump, and bolts and screws.

Text-book: Jamieson's "Mechanics."

Sophomore Year—Second Term, 2 theoretical periods per week.

427. Foundry Work. Moulding in iron and brass. Core making. The cupola and its management. Lectures on the selection of irons by fracture, fuels, melting and mixing of metals.

Sophomore Year—Third Term, 8 practical periods per week.

428. Steam Engines, Boilers and Dynamos. The principles of steam and the steam engine. The slide valve and valve diagrams. The indicator and its diagram. Steam boilers, the various types and their advantages. Each student taking this course is required to spend certain hours in the power plant actually operating the engines, boilers and dynamos. The theory of dynamos is given in courses 182 and 184.

Text-book: Allen and Bursley's "Heat Engines."

Sophomore Year—Third Term, 3 theoretical periods per week.

429. Elementary Machine Design. Freehand sketching of the details of machinery and making working drawings of same. Calculations and drawings of a simple type punching press.

Text-book: Hoffman's "Machine Design." Empirical designing.

Junior Year—First Term, 1 theoretical period and 4 practical periods per week; Second Term, 2 theoretical and 4 practical periods per week; Third Term, 3 theoretical and 8 practical periods per week.

430. Machine Work. Elementary principles of vise and machine work, which include turning, planing, drilling, screw cutting and filing. This is preceded by study of the different machines used in the machine shops.

Junior Year—First and Second Term, 4 practical periods per week; Third Term, 12 practical periods per week.

Senior Year—4 practical periods per week.

431. Graphic Statics. The theory and practice of the method of determining stresses in cranes, roof trusses and bridges, and stresses on beams and girders due to traveling loads. Analysis of the stresses in roof trusses by the force polygon. Application of the equilibrium polygon to beams and girders. Analysis of stresses in bridge trusses.

Text-book: Merriman and Jacoby's "Graphic Statics."

Junior Year—Second Term, 4 theoretical periods per week.

432. Experimental Engineering. Determining the amount of moisture in steam; the efficiency of the injector; the transit and its uses; indicator practice and the use of the planimeter; slide valve setting; the slide rule and micrometer; the analysis of boiler feed water; flue gases; lubricating oils; and the determination of the

heating value of coals. The efficiency test of a Curtis steam turbine combined with that of an electric generator. The brake test and steam consumption of a cross compound condensing Corliss engine under varying loading. The testing of iron, steel and wood to determine their commercial values. The testing of cement to determine its tensile and compressive strength. The determination of the horse-power, efficiency and gas consumption of a six H. P. gasoline engine. Barrel and throttling calorimeter tests. Determination of efficiency of a screw-jack. Injector testing. All such tests must be written upon standard forms provided for each student.

Junior Year—Third Term, 4 practical periods per week.

Senior Year—First Term, 4 practical periods per week; Second and Third Term, 8 practical periods per week.

433. Structural Design. Analysis of stresses in structural steel buildings, traveling cranes and derricks. Design of crane girders, lattice girders and roof trusses. In addition mechanical engineering students have design of cranes and civil engineering students have design of truss bridges and retaining walls. Both analytical and graphical methods are used, that being used which is best suited to problem. Design of riveted connections. Design of plate girders under dead and live loads.

Text-books: "Cambria Steel," Ketchum's "Steel Mill Buildings," Merriman's "Bridge Design," and Thompson's "Bridge and Structural Design."

Senior Year—First and Second Term, 2 theoretical and 4 practical periods per week; Third Term, 2 theoretical and 6 practical periods per week.

434. Mechanics of Engineering. The mechanics of solids, Statics of a material point and of rigid bodies. Chains and cords. Centrifugal and centripetal forces. Work. Power. Energy. Sliding friction, friction of journals, friction of pivots, friction of ropes and belts. Analysis of stresses in thick cylinders.

Text-book: Church's "Mechanics of Engineering."

Senior Year—First and Second Term, 4 theoretical periods per week; Third Term, 3 theoretical periods per week.

435. Kinematics of Machinery. Centrodes. Determination of the instantaneous axis and instantaneous center. Preparation of dis-

placement, velocity and acceleration diagrams. Design of cams. Slow advance and quick return motion for machine tools. Form of tooth outlines in the epicycloidal and involute systems.

Text-book: Barr and Wood's "Kinematics of Machinery."

Senior Year—First Term, 1 theoretical period and 4 practical periods per week.

436. Heat Engineering. Laws of fundamental equations; perfect gases; compound, hot-air and gasoline engines; theory of vapors; relation between pressure, volume, temperature, work and heat for special changes of state; calculation and drawing of Carnot's cycle and temperature entropy diagram. The steam turbine. Compressed air and refrigeration machinery.

Text-books: Mark and Davis' "Steam Tables," Gwinner's "Notes on Gas, Oil and Hot-air Engines," and Moyer and Calderwood's "Engineering Thermodynamics."

Senior Year—First and Third Term, 3 theoretical periods per week; Second Term, 4 theoretical periods per week.

437. Farm Machinery. A detailed study of the farm implements. One of the objects of the course is to familiarize the students with the latest improvements in farm machinery. Given by lectures and practical work.

Senior Year—First Term, 2 theoretical and 4 practical periods per week.

438. Hydromechanics. A continuation of course 130. Pumps and pumping machinery. Water supply engineering. Practical consideration of friction of water in pipes. Cost data of machinery. Notes and lectures.

Text-book: Gibson's "Hydraulics and Its Applications."

Senior Year—Second Term, 4 theoretical periods per week.

439. Design of Farm Structures. The design and arrangement of farm buildings and equipment. Lectures also cover the heating, lighting, ventilation, plumbing and costs. Elective.

Senior Year—Second and Third Term, 2 theoretical and 4 practical periods per week.

440. Design of Farm Machinery. The design and drafting of those portions of farm machinery common to engines, and to harvesting, pumping and fertilizing machinery such as levers, shafts, gears and frames. Elective.

Senior Year—Second and Third Term, 2 theoretical and 4 practical periods per week.

441. Farm Buildings. Design and specifications of a simple typical building in timber or concrete and lectures upon the details. The course is very practical and latitude is permitted the student to develop his ideas.

Senior Year—Third Term, 1 theoretical and 4 practical periods per week.

442. Heating and Ventilation. The principles of ventilating; amount of heat required for warming; radiating surfaces; steam, hot water and hot air systems; vacuum and vapor systems; pipe and pipe systems; appliances; specifications and contracts.

Text-book: Hoffman's "Heating and Ventilation."

Senior Year—Third Term, 2 theoretical and 4 practical periods per week.

443. School Architecture. The planning and detailing of moderate priced and medium sized school buildings; including the heating, ventilation, lighting and plumbing.

Senior Year—Third Term, 3 theoretical and 4 practical periods per week.

444. Advanced Pattern Making. Practical examples in loose-piece and three-part-flask patterns and in engine patterns.

Senior Year—Third Term, 8 practical periods per week.

445. Farm Drawing. Geometrical construction, plan and elevation with details of farm gate and plan and elevation of simple farm structures.

First Year—First Term, 4 practical periods per week.

446. Farm Wood Work. Use of tools in constructing trestles, gates and frames.

First Year—Second Term, 4 practical periods per week.

447. Farm Machinery. A detailed study of the farm implements and their care. Detail of costs of some of the prominent types. Lectures and practical work.

First Year—Second Term, 2 theoretical and 4 practical periods per week.

448. Farm Buildings. Study of general types of such structures. Calculating bill of material from sketches and making estimate of cost.

Second year—First Term, 4 practical periods per week.

MILITARY SCIENCE AND TACTICS.

CAPTAIN GEORGE T. EVERETT.

It is expected that on June 1st, 1917, the students will be organized into a senior unit of the Reserve Officers' Training Corps. The primary object of establishing units of the Reserve Officers' Training Corps is to qualify, by systematic training, students at civil educational institutions for reserve officers. The system of instruction presents to these students a standardized measure of that military training which is necessary in order to prepare them to perform intelligently the duties of commissioned officers in the military forces of the United States, and it enables them to be thus trained with the least practicable interference with their civil careers.

Under this organization all Freshman and Sophomores, except those excused for physical disability, will be required to attend two hours of practical drill and one hour of theoretical instruction a week; all Juniors and Seniors who sign a contract to continue in the Reserve Officers' Training Corps during the remainder of the course and to pursue a certain course in camp training, will have two hours of practical drill and three hours of theoretical instruction a week. Juniors and Seniors not signing the above contract may be required to pursue the practical course outlined for the Reserve Officers' Training Corps.

From the view-point of the student, military training develops patriotism, willingness to assume responsibility, knowledge of human nature, and physical and moral courage. It involves the cultivation of thought and action, the subjection of one's self to the restraints of an orderly, systematic life, and to a direct and

unselfish honesty. It involves the punctilious practice of dignified deportment, pride in personal appearance, and looking at life from a simple, straightforward standpoint. It develops a youth physically in a uniform, systematic manner, improves his health, and gives him that erect carriage and elastic stride, uplifted chin and the steady unfaltering eye which have come to be recognized the world over as indicating the man of military training.

The object of military training is to teach the student to secure intelligent concentration of effort. The success of any man depends largely upon his ability to enforce his will upon those under him and to cause them to execute his plans with promptness and precision. In everything involving united effort, men must be trained to orderly and concerted action before efficiency may be expected. "System" is merely discipline under another name.

INSPECTION.

The annual inspection of the institution is under the direction of the Commanding General, Eastern Department. His report is forwarded to the War Department. There is also an annual inspection by a member of the General Staff to determine the relative efficiency of the institution as compared to others.

ORGANIZATION.

The Corps of Cadets is organized as a battalion of three companies, staff and band, the drill and administration of which conform as far as possible to that of the Regular Army.

INSTRUCTION.

The course of instruction is prescribed by the War Department and is designed to develop the greatest amount of initiative on the part of the student, and also provides that the cadet officers and non-commissioned officers shall participate in the administration and training and share the responsibility therefor.

As the object of all training in the Reserve Officers' Training Corps is to bring the greatest possible number of cadets up to the proper standard of proficiency, permission to be absent is granted only for physical disability.

Close order drills and ceremonies have a disciplinary value but proficiency in such drills is not considered or treated as the final result to be accomplished in a season's training.

The course is so arranged that a student upon graduation should know what is required of a platoon from the point of view of a company commander, and understand thoroughly the interior economy of a company. He must know what is demanded of the soldier as an individual and also in combination as part of a larger organization. The last knowledge includes some idea of the technical handling of a battalion of which his company is a smaller unit.

EQUIPMENT.

The battalion of cadets is equipped with the United States magazine rifle, caliber 30, known as the Krag-Jorgensen, with complete equipment of side-arms, cartridge-box, etc. Commissioned officers are equipped with sabres, and non-commissioned staff officers with the regulation cadet sword.

The Government also has supplied the battalion with the new regulation subcalibre target rifle for gallery practice, and has been very liberal in the allowance of ammunition for gallery practice, of blank cartridges for field exercises, and of ball cartridges for outdoor range practice.

Students are held strictly accountable for all arms and equipment issued to them.

PROMOTIONS.

The officers and non-commssioned officers of the corps are selected with reference primarily to their fitness for the duties they will be required to perform. Their general deportment and proficiency in academic work are also given weight in making such selection.

Commissioned and non-commissioned officers are selected from the Senior and Junior Classes.

Cadet officers are required to serve from the beginning of the scholastic year up to March 1, of that year. On this date readjustment of rank is made, based upon the following: Military Effi-

ciency, as evidenced by the fall drills and winter recitations in the Tactical Department; Military Discipline and Soldierly Bearing; General Deportment.

UNIFORM.

The uniform worn by all members of the battalion of cadets is the regulation West Point fatigue uniform, and is made of the best Charlottesville gray cloth. The uniform consists of the gray fatigue blouse, trousers and cap for all military formations. By special contract with one of the largest Military Equipment houses in the United States, the uniform is furnished at a very low price. Measures for this uniform are taken as soon as the student arrives at College, and fit is guaranteed. For summer use there must also be provided two gray shirts, a pair of leggins, a waist belt, and a black tie.

When the unit of the Reserve Officers' Training Corps is established, the following articles of uniform will be furnished for each student by the United States Government:

One (1) pair olive drab woolen breeches.
One (1) olive drab cap.
One (1) olive drab woolen coat.
One (1) pair canvas leggins.
One (1) set cap and collar ornaments.
One (1) pair russet shoes.

White gloves, collars, caps and other military accessories may be purchased at the stores near the College, or from the contractor who furnishes the uniforms.

Information concerning the cost of uniforms, etc., may be found on page 136.

PHYSICAL CULTURE.

DIRECTOR BYRD.
DR. GRIFFITH.

Owing to the unusual conditions of the last four years, which have compelled absolute concentration on the College work, the required classes in the gymnasium have been temporarily discontinued. Recent appropriations by the Legislature for building construction will alleviate this condition and it will be only a short while now before the regular routine can be resumed. In the meantime everything possible has been and is being done to interest the students of all classes in outdoor sports. The College has expended considerable sums of money for equipment to enable large numbers of the students to take part in the several branches of outdoor athletics. This development is supplemented by class instruction in hygiene and the care of the person in relation to the physical and mental welfare. A complete course in corrective and general physical culture, to be supplemented by lectures in personal hygiene, is now being mapped out for use in the future. A system of exact measurements is to be used which will show the progress of the various students during each year. The course will be compulsory. For outline of course now given see page 117.

SUB-COLLEGIATE INSTRUCTION.

PROFESSOR HARRISON.
PROFESSOR RICHARDSON.

This Department was established in 1892, and reorganized in 1915; and is designed to meet the requirements of those students who have not had the advantage of a thorough high school training, with a view to equipping them to enter the regular collegiate department.

Only such students are desired as will be able to enter the Freshman Class within a year, and who are fifteen years of age. This course is recommended specially to students who have not been

to school for several years; for their progress in the regular collegiate course, by virtue of such a drawback, would be seriously impeded. It is to be remarked that as a rule the students who have taken this course make excellent progress in their later college work. Students in this Department are subject to the same military regulations as other students.

This Department will be eliminated July 1, 1918.

For outline of courses see page 117.

VETERINARY SCIENCE.

ACTING PROFESSOR KOCHER.

This Department offers instruction in the elements of veterinary science. The course embraces the study of the external form as well as the internal structure and functions of the domesticated animals. It is intended to supplement animal husbandry instruction, and does not have for its object the training of students for veterinary practice. The preservation of health in animals is more aimed at than their restoration from disease. When studiously pursued the courses offered are of great value to the breeder, feeder or manager of live stock.

COURSES OFFERED.

The accompanying brief descriptions indicate the scope of the different courses.

480. Anatomy and Physiology. This course embraces a general consideration of the structure and functions of the animal body, with especial reference to animal production and dairying.

Senior Year—Second Term, 3 theoretical periods per week.

481. Animal Diseases. A study is made of the diseases of the domesticated animals with emphasis upon sanitation, practical bacteriology, nursing, administration of medicine and use of common medicinal substances. The aim of this course is to enable the student to perceive the early appearance of diseases and care for them intelligently under proper veterinary supervision.

Senior Year—Third Term, 3 theoretical and 4 practical periods per week.

482. ANIMAL DISEASES. A briefer course in animal diseases is offered to the students in the two-year Agricultural Course.

Second Year—Second Term, 3 theoretical and 2 practical periods per week.

THE COLLEGE LIBRARY.

MISS CONNER.

In 1915 the College Library and that of the Experiment Station were consolidated and are now administered under one head. The first floor of the Library Building is devoted to books and periodicals relating to agriculture and allied sciences. The second floor is used as a general reading-room and also as a stack room for the more general classes of books.

The combined libraries contain approximately fifteen thousand books and pamphlets. Most of the leading magazines and newspapers are subscribed for; technical periodicals, as a rule, are deposited in the libraries of the various departments of the College and Experiment Station. Through the generosity of the county press of the State, most of the county papers are available for use by the patrons of the Library.

The central, basic idea of the administration of the Library is service. It is frankly recognized that the Library should be a laboratory for the use of students, members of the faculty and members of the Experiment Station Staff; and everything possible is done to make the Library popular. The reading-rooms are well arranged and lighted, and are in all respects comfortable and convenient. Every facility is offered to those desiring to make researches within the scope of the books and publications on the shelves of the Library. Through the courtesy of the Librarian of Congress and the Librarian of the Department of Agriculture, the resources of those institutions are made available for the use of patrons of the College Library.

Grateful acknowledgment is made to many State and Government Departments, and to other publishing offices for documents regularly received by the Library. Special thanks are due the county press for their liberality in sending their publications free to the Library.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

MR. ORTMAYER.

Aims.

Service, first, last and all the time is the aim of the Y. M. C. A. It attempts nothing through selfish motives, but through the desire to turn into right channels a boy's surplus energy.

Nature.

The Maryland State College Association is affiliated with the International Y. M. C. A. and membership in the local branch carries with it a welcome to all city and student associations, and during vacation periods, entitles the holder to many of the privileges of the city Y. M. C. A.

Officers.

A salaried secretary is in charge of the Y. M. C. A. organization. He works through and with a student cabinet, having a President, Vice-President, Recorder, Treasurer, and Chairman for each of the following committees: Employment, Membership, Social Affairs, Music, Publications and Bible Study.

The Employment Committee assists students in finding the kind of work they want, acting as a clearing-house for employer and employee.

The Membership Chairman's duties are as the title indicates. The Social Chairman plans receptions, banquets, and social affairs affording a pleasant evening's entertainment for all. The Music Chairman obtains special music for Sunday and other meetings, and the Publications Chairman keeps the public informed.

The Bible Study Chairman organizes bible and special problem study classes, and endeavors to interest the student in unselfish ideals.

Regular Meetings.

Special speakers on both popular and religious subjects, are provided for Sunday 3:30 meetings. The proximity to Washington makes it possible to obtain the best of talent, Representatives, Government officials, worth-while business men, and Ministers of power, thus making the meetings of great value.

Location.

The Y. M. C. A. is located in Calvert Hall. It has beautiful quarters; a game room, furnished with all kinds of games, a pool room, a reading and writing room, and an office for the Secretary. A good readable line of books having a sane, helpful, moral tone make the reading room attractive.

New Students.

Receptions are given to get the new men acquainted with the student body and with the members of the faculty, so as to make them feel "at home."

New students are given special attention, warned of dangers and guided to harmless but interesting methods of "letting off steam" without scorching their moral fibre.

A handbook is published, giving the student detailed information about the College, its societies and activities. Upon request it will be mailed to you free of charge.

The Association welcomes at all times suggestions for its betterment and extension of its service.

COURSES OF STUDY.

In order to systematize the work of the different departments of the College, and as far as possible arrange for specialization within limits consistent with the normal development of individual students, several distinct courses of study have been prepared, one of which the student is expected to choose upon entering the regular College work.

These courses are Agricultural Education, Agronomy, Animal Husbandry, Horticulture, Biology, Chemistry, Canning, General Science, Civil Engineering, Electrical Engineering, Mechanical Engineering, Rural Engineering, and Engineering Education.

A continuous and progressive course of work, beginning in the Freshman year, with a nearly uniform course for all students, and gradually separating in the three succeeding years until the class work is almost wholly specialized, has been found to be most satisfactory. A broad and liberal foundation in English, mathematics and history is laid in the Freshman and Sophomore years, and then the particular line of study desired is emphasized more and more until the end of the course.

In addition to the regular collegiate courses, a two-year Course is given in Agriculture. Many electives are offered in the second year.

There is also a Course in Sub-Collegiate Instruction for the benefit of students unable to obtain elsewhere adequate preparation for entrance into the Freshman Class.

Short Winter Courses in Agriculture, Horticulture and Engineering are given for the benefit of those who find it impossible to afford the time necessary for an extended course in these subjects.

The College, in co-operation with the State Department of Education, conducts a six-weeks' SUMMER SCHOOL, beginning this year on June 25th.

The purpose of the SUMMER SCHOOL is to provide a course of vocational training for teachers and prospective teachers of rural and graded schools. The work offered this year includes courses in Elementary Agriculture, Domestic Science and Art, Industrial Hand Work, Theory and Practice of Teaching, History of Mary-

land, State and National Constitutions, Chemistry, Physics, Botany, Zoology and Entomology.

A bulletin giving a full description of the courses is issued by the College. For full information address the Director of the Summer School.

A SUMMER SCHOOL for MINISTERS will be held from July 30th to August 7th for those who wish to broaden their field of service in the communities in which they labor. Courses will be given in Rural Sociology, Rural Economics, Religious Pedagogy and Agriculture. Further information concerning these courses may be obtained from Professor F. B. Bomberger, Dean of the Division of Rural Economics and Sociology.

A CONFERENCE on COUNTRY LIFE will be held for MINISTERS on August 8th, 9th and 10th. Leaders of national reputation will present matters of vital interest to the Church. Bulletins containing complete information concerning this Conference may be obtained upon request from Mr. Louis Ortmayer, Secretary of the Young Men's Christian Association.

In the tabular statements of the courses the periods per week are given, the numbers in parenthesis denoting practical or laboratory periods, the others theoretical or recitation periods.

AGRICULTURAL EDUCATION COURSE.

The Course in Agricultural Education is arranged to give the student a broad general knowledge of agriculture, languages, science and pedagogy.

Students taking this course receive practically the same work during the first two years as those of the other agricultural courses. In the Junior and Senior years the agricultural work is continued, in addition to the special work in pedagogy and practice teaching which these students receive. Enough of agriculture is included in the course to enable the student to carry on farm operations in a scientific manner. The graduate is fitted not only to teach and supervise the teaching of agricultural subjects, but to manage school demonstration farms or conduct a farm of his own.

Students taking this course will be required to spend at least eight weeks of the summers following the Sophomore and Junior years in actual farm work on their home farms or on other accredited farms under the supervision of the College. All students will be required to keep notes and on their return to College to submit a written report of the summer's work and observations.

Agricultural Education Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400..	5		
English 220, 232.....	4(2)	4(2)	4(2)
History 160.....	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360 !	3**	3**	3**
French 380 !	3**	3**	3**
Agronomy 20.....			3(2)
Animal Husbandry 40 ...	1(4)		
Animal Husbandry 41 ...		3(4)	
Botany 60.....			2(6)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420...	(4)		
Military Instruction	1(2)	1(2)	1(2)
.....			
.....			
.....			
Junior Year.			
Mechanics and Sound 200, 203.....	2(4)		
Electricty and Magnetism 201, 204		2(4)	
Heat and Light 202, 205...			2(4)
Advanced Composition 222	1(2)	1(2)	1
Public Speaking 234.....	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
Psychology 1.....	4(2)		
History of Education 2 ...		4	
Principles of Education 3.			4
Grain Judging 25.....		(4)	
Animal Nutrition 43.....		3	2(4)
Stock Judging 46.....			2(4)*
Fruit Judging 262.....	(2)*		
Landscape Gardening 302.	(2)*		
Vegetable Pathology.66..			2(4)*
Geology 86.....	2(2)		
Organic Chemistry 87.....	4		
Bacteriology 100		(8)	(8)*
Surveying 126.....			2(4)
Mechanical Drawing 421..	(4)		
Woodwork 423.....		(4)	
Military Instruction.....	R	R	R

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 233.....	(2)	(2)	(2)
German 361.....	3*	3*	3*
French 381.....	3*	3*	3*
Farm Crops 21.....	2(2)		
Soils 22.....	2(4)	2(4)	
Fertilizers 23.....			2(4)
Pomology 260.....	1(4)		2(2)
Vegetable Culture 280.....		2(4)	1(4)
Landscape Gardening 300..		1(2)	
Home Grounds 301.....			(4)
Plant Histology 61.....	1(6)		
Plant Physiology 62.		2(4)	1(4)
Entomology 242.....			2(4)
Chemistry 81.....	2(6)		
Quantitative Analysis 83...		1(8)	
Military Instruction	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225....	(2)	(2)	1
Political Economy 142	4	4	4
Secondary Education 4....	3(2)		
Organization and Materials 5.....		3(2)	
Rural Organization 6.....			3(2)
Advanced Crops 26.....	2(4)*		
Advanced Soils 27.....	2(4)*		
Farm Management 28.....		2(4)	2(4)*
Dairy Management 49.....		2(4)	
Farm Poultry 50.....		3	
Live Stock Management 51			2(4)*
Animal Diseases 481.....			3(4)
Plant Breeding 268.....		3(2)	(4)**
Market Gardening 286.....			2(4)*
Amateur Floriculture 315..			2(4)*
Farm Forestry 320.....			2(4)
Agricultural Chemistry 91.	4		
Agricultural Analysis 92...	(4)		
Farm Drainage 128.....	(4)		
Farm Machinery 437.....	2(4)		
Farm Buildings 441.....			(4)**
Research and Thesis 7.....		(2)	(2)
Military Instruction.....	R	R	R
.....			

*Alternative.

!For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

AGRONOMY COURSE.

The four-year Course in Agronomy is designed to fit the graduate for conducting practical operations on the farm, or, should taste or circumstances so direct, to prosecute successfully advanced scientific research along the lines of agronomy, or, if occasion requires, to act as county demonstrators or advisers. With these ends in view, the Course has been made at once comprehensive and technical. It is comprehensive enough to include whatever is necessary

Agronomy Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400..	5		
English 220, 232.....	4(2)	4(2)	4(2)
History 160.....	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360 !.....	3**	3**	3**
French 380 !.....	3**	3**	3**
Agronomy 20.....			3(2)
Animal Husbandry 40 ...	1(4)		
Animal Husbandry 41 ...		3(4)	
Botany 60.....			2(6)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420...	(4)		
Military Instruction.....	1(2)	1(2)	1(2)
.....			
.....			
.....			
Junior Year.			
Mechanics and Sound 200, 203.....	2(4)		
Electricty and Magnetism 201, 204.....		2(4)	
Heat and Light 202, 205...			2(4)
AdvancedComposition 222	1(2)	1(2)	1
Public Speaking 234.....	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
Psychology 1.....	4		
Advanced Soils 24.....	(4)		
Grain Judging 25.....		1(4)	
Animal Nutrition 43.....		3(2)	
Stock Judging 46.....			2(4)
Vegetable Pathology 66...			2(4)
Geology 86.....	2(2)	2	
Organic Chemistry 87....	4		
Bacteriology 100.....		(8)	(8)
Surveying 126.....			2(4)
Mechanical Drawing 421.	(4)		
Woodwork 423.....		(4)	
Military Instruction.....	R	R	R

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 233	(2)	(2)	(2)
German 361.....	3*	3*	3*
French 381	3*	3*	3*
Farm Crops 21.....	2(2)		
Soils 22.....	2(4)	2(4)	
Fertilizers 23.....			2(4)
Pomology 260.....	1(4)		2(2)
Vegetable Culture 280.....		2(4)	1(4)
Landscape Gardening 300.		1(2)	
Home Grounds 301.....			(4)
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Entomology 242.....			2(4)
Chemistry 81.....	2(6)		
Quantitative Analysis 83..		1(8)	
Military Instruction.... ..	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225....	(2)	(2)	1
Political Economy 142	4	4	4
Advanced Crops 26.....	2(4)	(4)	
Advanced Soils 27.....	2(4)		
Farm Management 28.....		2(4)	2(4)
Dairy Management 49.....		2(4)	
Farm Poultry 50.....		3	
Anatomy and Physiology 480.....		3	
Animal Diseases 481			3(4)
Plant Breeding 268.....		3(2)	(4)
Farm Forestry 320.....			2(4)
Agricultural Chemistry 91	4		
Agricultural Analysis 92...	(4)		
Farm Drainage 128.....	(4)		
Farm Machinery 437.....	2(4)		
Farm Buildings 441.....			1(4)
Research and Thesis 29 ..			(4)
Military Instruction.....	R	R	R
.....			
.....			
.....			

*Alternative.

!For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

for the complete development of the work, yet technical enough to make the student feel that he is a specialist and equipped for special work.

Students taking this Course will be required to spend at least eight weeks of the summers following the Sophomore and Junior years in actual farm work on their home farms or on other accredited farms under the supervision of the College. All students will be required to keep notes and on their return to College to submit a written report of the summer's work and observations.

ANIMAL HUSBANDRY COURSE.

The purpose of the Course in Animal Husbandry is to fit the graduate to carry out successfully the operations pertaining to general farming, to become an expert in the raising and feeding of live stock, to pursue scientific investigations along lines pertaining to animal husbandry, or to act in the capacity of an adviser or demonstrator in rural communities. Therefore, the curriculum has been outlined to include, in addition to the subjects necessary for the development of a specialist in animal husbandry, those which will give a broad training in agriculture and other cultural branches.

Students taking this Course will be required to spend at least eight weeks of the summers following the Sophomore and Junior years in actual farm work on their home farms or on other accredited farms under the supervision of the College. All students will be required to keep notes and on their return to College to submit a written report of the summer's work and observations.

Animal Husbandry Course.

Subject.	Term. I	II	III
Freshman Year.			
Plane Trigonometry 400..	5		
English 220,232.....	4(2)	4(2)	4(2)
History 160.....	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360 !.....	3**	3**	3**
French 380 !.....	3**	3**	3**
Agronomy 20.....			3(2)
Animal Husbandry 40.....	1(4)		
Animal Husbandry 41.....		3(4)	
Botany 60.....			2(6)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420....	(4)		
Military Instruction.....	1(2)	1(2)	1(2)
.....			
.....			
.....			
Junior Year.			
Mechanics and Sound 200, 203.....	2(4)		
Electricity and Magnetism 201, 204.....		2(4)	
Heat and Light 202, 205...			2(4)
AdvancedComposition 222	1(2)	1(2)	1
Public Speaking 234.....	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
Psychology 1.....	4		
Breeds and Breeding 42..	(4)		
Animal Nutrition 43.....		3(2)	2(4)
Principles of Breeding 44.		3	
Stock Judging 46.....			2(4)
Geology 86.....	2(2)	2	
Organic Chemistry 87....	4		
Bacteriology 100.....		(8)	(8)
Surveying 126.....			2(4)
Mechanical Drawing 421..	(4)		
Woodwork 423.....		(4)	
Military Instruction.....	R	R	R

Subject.	Term. I	II	III
Sophomore Year.			
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 233.....	(2)	(2)	(2)
German 361.....	3*	3*	3*
French 381.....	3*	3*	3*
Farm Crops 21.....	2(2)		
Soils 22.....	2(4)	2(4)	
Fertilizers 23.....			2(4)
Pomology 260.....	1(4)		2(2)
Vegetable Culture 280.....		2(4)	1(4)
Landscape Gardening 300.		1(2)	
Home Grounds 301.....			(4)
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Entomology 242.....			2(4)
Chemistry 81.....	2(6)		
Quantitative Analysis 83..		1(8)	
Military Instruction.....	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225....	(2)	(2)	1
Political Economy 142.....	4	4	4
Advanced Crops 26.....	2(4)		
Farm Management 28.....		2(4)	2(4)
Animal Nutrition 47.....	3(4)		
Dairying 48.....	3(8)		
Farm Poultry 50.....		3	
Live Stock Management 51			2(4)
Anatomy and Physiology 480.....		3	
Animal Diseases 481.....			3(4)
Farm Forestry 320.....			2(4)
Animal Parasites 247.....		2(4)	
Bacteriology 101.....		1(6)	
Farm Machinery 437.....	2(4)		
Farm Buildings 441			1(4)
Research and Thesis 52....		(4)	
Military Instruction.....	R	R	R
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*Alternative.

!For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

HORTICULTURAL COURSE.

Through the reorganization of the Department of Horticulture an opportunity is presented for students in the four-year Course to specialize in either pomology, vegetable culture or landscape gardening and floriculture.

Horticultural Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400..	5		
English 220, 232.....	4(2)	4(2)	4(2)
History 160	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360†	3**	3**	3**
French 380†	3**	3**	3**
Agronomy 20			3(2)
Animal Husbandry 40....	1(4)		
Animal Husbandry 41....		3(4)	
Botany 60.....			2(6)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420...	(4)		
Military Instruction	1(2)	1(2)	1(2)
.....			
.....			
.....			
Junior Year.			
Mechanics and Sound 200, 203.....	2(4)		
Electricity and Magnetism 201, 204.....		2(4)	
Heat and Light 202, 205...			2(4)
AdvancedComposition 222	1(2)	1(2)	1
Public Speaking 234	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
Psychology 1.....	4		
Commercial Pomology 261	2(4)‖		
Fruit Judging 262.....	(2)‖	(2)‖	
Practical Pomology 263...		2(4)‖	(4)‖
Small Fruit Culture 264...			2(2)‖‡
Vegetable Forcing 281....	2(4)‡	2(4)‡	(4)‡
Vegetable Literature 282.	(2)‡	1‡	
Landscape Gardening 302	(2)§		
Floriculture 303.....	2(4)§		
Commercial Floriculture 304, 305.....		4(4)§	2(6)§
Vegetable Pathology 66...			2(4)
EconomicEntomology 244		3(2)	1(4)
Organic Chemistry 87....	4		
Bacteriology 100.....		(8)‖‡	
Engineering Drawing 120		(6)§	
Surveying 126			2(4)
Mechanical Drawing 421.	(4)		
Woodwork 423.....		(4)	
Military Instruction.....	R	R	R
.....			

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 233	(2)	(2)	(2)
German 361.....	3*	3*	3*
French 381.....	3*	3*	3*
Farm Crops 21.....	2(2)		
Soils 22.....	2(4)	2(4)	
Fertilizers 23.....			2(4)
Pomology 260.....	1(4)		2(2)
Vegetable Culture 280.....		2(4)	1(4)
Landscape Gardening 300.		1(2)	
Home Grounds 301.....			(4)
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Entomology 242			2(4)
Chemistry 81.....	2(6)		
Quantitative Analysis 83..		1(8)	
Military Instruction.....	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225....	(2)	(2)	1
Political Economy 142.....	4	4	4
Farm Management 28.....		2(4)	2(4)
Dairy Management 49.....		2(4)!	
Farm Poultry 50.....		3!	
Systematic Pomology 265.	2(4)‖	1(4)‖	
Advanced Pomology 266 ..	2(4)‖		2(4)‖
Pomology 267.....		3‖	
Plant Breeding 268.....		3(2)	(4)
Commercial Vegetable Gardening 283.....	1(4)‡	2(4)‡	2(4)‡
Vegetable Gardening 284..	1(2)‡		
SystematicOlericulture 285	1(4)‡	(4)‡	1(4)‡
Market Gardening 286.....			2(4)‖
Greenhouse Construction 306.....	2(4)§		
Landscape Design 307, 309.	2(4)§	2(4)§	
Civic Art 308.....	2§		
Landscape Practice 310....		(4)§	1(4)§
Plant Materials 311.....		2(2)§	
Floral Decoration 312.....		1(4)§	
Garden Flowers 313			2(4)§
Tree Repair 314.....			1(4)§
Farm Forestry 320.....			2(4)
Agricultural Chemistry 91	4		
Agricultural Analysis 92 ..	(4)		
Farm Machinery 437.....	2(4)		
Research and Thesis { 269.	(4)‖	(6)‖	(4)‖
Research and Thesis { 287.	(4)‡	(6)‡	1(4)‡
Military Instruction.....	R	R	R

*Alternative.

!Alternative for students in Pomology and Vegetable Gardening. If Dairy Management be elected Research and Thesis must be reduced to 4 practical periods.

‖For students specializing in Pomology.

‡For students specializing in Vegetable Gardening.

§For students specializing in Landscape Gardening and Floriculture.

†For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

These courses are designed to fit the student for conducting practical operations in horticulture on the farm, or to continue scientific research work and teaching in his chosen field. Practical work is made a prominent feature of the course. In the Freshman and Sophomore years the work is not materially different from that of the Agricultural and Biological Courses, as all students are required to take certain fundamental subjects. In the Junior and Senior years the courses become specialized.

Students taking these courses will be required to spend at least eight weeks of the summers following the Sophomore and Junior years in actual horticultural work on their home farms or on other accredited farms under the supervision of the College. All students will be required to keep notes and on their return to College submit a written report of the summer's work and observations.

The College and Experiment Station farm, orchards, greenhouses, etc., together with the close proximity of the Institution to the United States Department of Agriculture greenhouses and experiment farms, offer unusual opportunities to the students in horticulture.

TWO-YEAR AGRICULTURAL COURSE.

A large number of young men seeking to better themselves in their chosen profession of farming are calling for instruction in those courses pertaining to practical agriculture. Many of them have neither the time nor means at hand to take the full four-year Course, but while away in school they wish to gain the greatest possible amount of instruction and assistance which is particularly applicable to the farm. They realize that the farm can no longer be run in the old-time haphazard way, that there is a demand for skill and the highest order of intelligence to make a success on the farm, as in any other line of human endeavor, and that brains must be planted with each little seed, and also put into the feeding trough for the animal. To meet the demand for instruction along these

Two-Year Agricultural Course.*

Subject.	Term.			Subject.	Term.		
	I	II	III		I	II	III
First Year.				**Second Year.**			
Farm Accounts	2			Business Law		3	
English	4(2)	4(2)	3(2)	Rural Organization			2
Farm Literature	(2)	(2)	(2)	Agronomy	4(8)‖	2(4)‖	4(8)‖
Farm Crops and Soils	3(2)		3(4)	Fertilizers		3(2)	
Animal Husbandry	2(4)	3(2)	3(4)	Farm Crops		1(4)	3(2)
Horticulture	2(4)	3(6)	2(4)	Farm Management		2(2)	
Farm Botany	1(4)			Animal Industry	4(8)‖	2(4)‖	4(8)‖
Farm Zoology and Entomology		2(2)	2(2)	Animal Feeding	3(2)		
Farm Chemistry			2(2)	Farm Poultry			2
Farm Drawing	(4)			Animal Diseases		3(2)	
Farm Woodwork		(4)		Horticulture	4(8)‖	2(4)‖	4(8)‖
Farm Machinery		2(4)		Farm Forestry			2(4)
Military Instruction	1(2)	1(2)	1(2)	Plant Diseases	2(2)		
.....				Sprays and Spraying		1(2)	(4)
.....				Farm Chemistry	4(4)		
.....				Farm Bacteriology		(4)	
.....				Farm Water Supply and Sewerage	(4)		
.....				Farm Drainage			2(2)
.....				Farm Buildings	(4)		
.....				Military Instruction	1(2)	1(2)	1(2)

*A description of the courses given will be found in each Department involved at the end of courses offered.

‖The student, after consultation with the Professor in charge of the Course, will elect from the courses offered in agronomy, animal industry and horticulture a sufficient number of subjects to make up the required number of periods.

lines, and for a better understanding of the underlying principles of successful agriculture, a short course of two years has been provided.

It embraces much of the technical work of the four-year Courses, and is especially designed to lay a foundation that will secure success in practical farming, which, as it must be conducted today, is a union of many interests. To enter this Course the applicant must be not less than sixteen years of age and must satisfy the College authorities by examination or otherwise that he has preparation at least equal to the work of the seventh grade of the Maryland public schools.

Students taking this Course are required to spend not less than ten weeks during the summer between the First and Second year in actual farm work on some accredited farm under the supervision of the College.

SHORT WINTER COURSES.

For men and women who can spare from one to ten weeks only from their home duties the College offers a series of short courses occupying from one to two weeks each, beginning after the Christmas vacation.

For 1918 the arrangement will be:

First week—Soils and Fertilizers.

Second week—Farm Crops.

Third week—Farm Machinery and Farm Engines.

Fourth and fifth week—Horticulture.

Sixth week—Poultry Husbandry.

Seventh week—Dairying.

Eighth week—{ Horses and Beef Cattle. / Domestic Science.

Ninth week—Swine and Sheep Husbandry.

Tenth week—Farm Carpentry, Blacksmithing and Pipe Fitting.

Experience has demonstrated the advantage of dividing the work into short periods, during which time the attention of the student is engrossed wholly with one subject. It enables the student to concentrate his efforts and affords opportunity for those who are interested in but one or two subjects, such as poultry husbandry or domestic science, for example, to take what they desire with the greatest economy of time.

No charge is made to short course students for the use of laboratories. Good board at moderate rates can be secured in the neighborhood. For more detailed information regarding these courses, write for bulletin and folders.

BIOLOGICAL COURSE.

The Biological Course, while offering a general education and special training in the natural sciences, is outlined in particular for those who wish to specialize in some branch of botany or zoology. It aims to fit men for practical work in the field of plant pathology and entomology, but will also give training for special work in the pure sciences.

In addition, this Course is specially valuable in preparing students who wish to enter the medical profession, particularly those who expect to enter the higher grade medical schools, which require for entrance a four year collegiate course in sciences and languages. These students will be required to substitute organic chemistry for some subject given in the regular Biological Course.

There are many opportunities for scientific workers in connection with the agricultural investigations of the Federal Government and of the State Experiment Stations, as well as in the State inspection work, for which this Course gives training. In fact, it is now difficult to secure men trained for such work. Full opportunity is given for the student to develop his natural resources and to learn to do work on his own responsibility. A large part of his time is spent in both practical and theoretical biological studies, without neglecting the cultural studies which are a necessary foundation for every specialist.

Biological Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400..	5		
English 220, 232.....	4(2)	4(2)	4(2)
History 160.....	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360‡	3**	3**	3**
French 380‡.....	3**	3**	3**
Agronomy 20.....			3(2)
Animal Husbandry 40....	1(4)		
Animal Húsbandry 41....		3(4)	
Botany 60.....			2(6)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420...	(4)		
Military Instruction.....	1(2)	1(2)	1(2)
.....			
.....			
Junior Year.			
Mechanics and Sound 200, 203	2(4)		
Electricity and Magnetism 201, 204.....		2(4)	
Heat and Light 202, 205...			2(4)
AdvancedComposition 222	1(2)	1(2)	1
Public Speaking 234.....	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
Psychology 1.....	4		
Morphology 63.....	2(4)		
Economic Plants 64.....		1(4)†	
Vegetable Pathology 66..			2(4)
Botany 67...			2(6)†
Economic Zoology 243....	1(4)	2(4)	
EconomicEntomology 244		3(2)	1(4)
Entomology 245		1(4)!	2(6)!
Organic Chemistry 87....	4		
Bacteriology 100.....		(8)	(8)
Military Instruction.....	R	R	R

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 233.....	(2)	(2)	(2)
German 361.....	3*	3*	3*
French 381.....	3*	3*	3*
Farm Crops 21	2(2)		
Pomology 260.....	1(4)		2(2)
Vegetable Culture 280.....		2(4)	1(4)
Landscape Gardening 300.		1(2)	
Home Grounds 301.....			(4)
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Zoology 241.....	2(4)	2(4)	2(4)
Entomology 242.....			2(4)
Chemistry 81.....	2(6)		
Quantitative Analysis 83.		1(8)	
Military Instruction.....	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225....	(2)	(2)	1
Political Economy 142.....	4	4	4
German 362.....	3*	3*	3*
French 382.....	3*	3*	3*
Advanced Botany 68	7(12)†	7(12)†	7(12)†
Advanced Entomology 246	7(12)!	7(12)!	7(12)!
Research and Thesis 69,248	(8)	(8)	(8)
Military Instruction.....	R	R	R
.....			
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*Alternative.
†For students specializing in Botany.
!For students specializing in Entomology.
‡For present, students offering entrance credits in German will take French and vice versa.
R. Required. For further information see page 84.

CHEMICAL COURSE.

The Course in Chemistry differs but little from the other courses until the beginning of the Sophomore year and the work in the Freshman year of any of the four-year courses will prepare for it, as the amount of chemistry is the same in all courses to the be-

ginning of the Second Term of the Sophomore year and the demands on the agricultural or technical chemist are now so varied that a foundation with more of the essentials of the agricultural or the engineering courses is often desirable.

Beginning with the Second Term of the Sophomore year the major part of the student's time is devoted to chemistry, the practical work in the laboratory occupying approximately half of his time. The Course is essentially a course in agricultural chemistry, fitting the graduate for positions in agricultural colleges, experiment stations and the United States Department of Agriculture.

Chemical Course.

Subject.	Term. I	II	III
Freshman Year.			
Plane Trigonometry 400..	5		
Algebra 401.....		3	
Analytics 402.....			5
English 220, 232.....	4(2)	4(2)	4(2)
History 160.....	3*	3*	3*
Latin 340	3*	3*	3*
German 360†	3**	3**	3**
French 380†	3**	3**	3**
Botany 60.....			2(4)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420....	(4)		
Mechanical Drawing 421..		(4)	
Woodwork 423	(6)		
Military Instruction.....	1(2)	1(2)	1(2)
.....			
.....			
.....			
Junior Year.			
AdvancedComposition 222	1(2)	1(2)	1
Public Speaking 234	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
German 362.....	3*	3*	3*
French 382.....	3*	3*	3*
Micro Botany 65.....			2(4)
Geology 86	2(2)	2	
Organic Chemistry 88.....	3(4)	3(4)	3(4)
Quantitative Analysis 89..	1(12)	1(14)	1(12)
Stoichiometry 90.....	1	1	1
Military Instruction.....	R	R	R

Subject.	Term. I	II	III
Sophomore Year.			
Analytics 402.....	5		
Calculus 403.....		5	
Mechanics and Sound 200, 203.....	3(4)		
Electricity and Magnetism 201, 204.....		3(4)	
Heat and Light 202, 205....			3(4)
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 233.....	(2)	(2)	(2)
German 361	3*	3*	3*
French 381.....	3*	3*	3*
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Chemistry 81.....	2(6)		
Qualitative Analysis 82....		1(8)	
Chemistry 84.....			3(10)
Mineralogy 85.....			1(4)
Military Instruction.....	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225....	(2)	(2)	1
Political Economy 142.....	4	4	4
Agricultural Chemistry 91.	4		
Agricultural Analysis 92..	(12)		
Physiological Chemistry 93	4(4)		
Physical Chemistry 94.....		3(14)	3
Inorganic Chemistry 95...		3	3
Industrial Chemistry 96...		3	3
Chemistry 97.....			(8)
Bacteriology 101.....	1(6)	1(6)	1(6)
Research and Thesis 98....			(6)
Military Instruction.....	R	R	R

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

CANNING COURSE.

The great importance of the canning industry in Maryland; the fact that it is, to a great extent, an agricultural industry, and the further fact that the suggestion of this Course has met with such hearty indorsement from prominent canners, has caused the College authorities to establish a Course in Canning, in order that young men interested may have an opportunity to become acquainted with the underlying sciences, and at the same time secure a liberal education.

Canning Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400..	5		
Algebra 401.....		3	
English 220,232.....	4(2)	4(2)	4(2)
History 160.....	3*	3*	3*
Latin 340.....	3*	3*	3*
German 360†.....	3**	3**	3**
French 380†	3**	3**	3**
Agronomy 20.....			3(2)
Botany 60.....			2(6)
Zoology 240.....	2(4)	2(4)	
Chemistry 80.....		4(2)	4(2)
Freehand Drawing 420...	(4)		
Mechanical Drawing 421.		(4)	
Woodwork 423.....	(6)		
Military Instruction.....	1(2)	1(2)	1(2)
.....			
.....			
.....			
.....			
Junior Year.			
AdvancedComposition 222	1(2)	1(2)	1
Public Speaking 234.....	(2)	(2)	(2)
Civil Government 140.....	3	3	
Business Law 141.....			3
German 362.....	3*	3*	
French 382.....	3*	3*	
Fruit Judging 262.....	(2)		
Small Fruit Culture 264...			2(2)
Vegetable Pathology 66..			2(4)
Organic Chemistry 88	3(4)	3(4)	3(4)
Quantitative Analysis 89.	(8)		
Bacteriology 100.....		(8)	(8)
Canning Technology.....	2(4)	5(4)	2(4)
Electrical Laboratory 186.	(4)		
Military Instruction.....	R	R	R

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Mechanics and Sound 200, 203.....	3(4)		
Electricity and Magnetism 201, 204.....		3(4)	
Heat and Light 202, 205....			3(4)
Composition 221.....	1(2)	1(2)	1(2)
Public Speaking 233	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Agronomy 21.....	(2)		
Soils 22.....	2(4)		
Vegetable Culture 280.....		2(4)	1(4)
Landscape Gardening 300..		(2)	
Plant Histology 61.....	1(6)		
Plant Physiology 62.....		2(4)	1(4)
Entomology 242.....			2(4)
Chemistry 81.....	2(6)		
Quantitative Analysis 83,84		1(8)	3(2)
Military Instruction.....	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225....	(2)	(2)	1
Political Economy 142.....	4	4	4
Plant Breeding 268.....		3(2)	
Commercial Vegetable Gardening 283.....	1(4)	2(4)	2(4)
Vegetable Gardening 284..	1(2)		
Agricultural Chemistry 91.	4		
Agricultural Analysis 92...	(8)		
Physical Chemistry 94.....		3(4)	3
Industrial Chemistry 96....		3	3
Chemistry 97.....			(4)
Canning Technology.....	3(4)	2(4)	3(6)
Practical Problems 127.....	(4)		
Research and Thesis.....			(4)
Military Instruction.....	R	R	R

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

During the first two years of the Course the studies will not differ much from those of the other courses. After this a large part of the student's time will be occupied with sciences relating directly to the canning industry, such as bacteriology, chemistry, agriculture, horticulture, and canning technology. This latter will cover a wide range and will include the theory and practice of canning in various lines, experimental work, and lectures from persons of national reputation. Assistance in these lectures has been promised by officers of the National Canners' Association and others.

A canning expert is to be engaged to take charge of the technical instruction in canning, which will include both theoretical and laboratory work.

Routine and factory experience are expected to be gained by students spending at least two summers, usually devoted to vacation, in a canning factory.

GENERAL SCIENCE COURSE.

The General Science Course is offered to those young men who have not chosen as their vocation in life any of the technical professions, but who are seeking for such general culture as will fit them to become, after graduation, useful members of society. Young men desiring to study law, or medicine, or the liberal arts, or to become teachers, will find in the curriculum of this Course a highly satisfactory preparation for such work. While emphasis has been placed upon subjects, such as English, language, literature, history, mathematics, etc., the natural sciences occupy a prominent place in the Course and the range of electives will enable each to choose for himself, under certain necessary regulations, such a group of studies as will be best adapted to his own peculiar requirements.

A wide range of electives is offered in order to meet as far as possible the needs of every student. At the opening of the session the student must select with the approval of the Dean of the Division a consistent group of courses for the year. No change may be made in this group later in the session except with the approval of the Dean.

General Science Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Plane Trigonometry 400..	5		
Algebra 401		3	
Analytics 402			5
English 220, 232	4(2)	4(2)	4(2)
Latin 340	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Botany 60			2(4)
Zoology 240	2(4)	2(4)	
Chemistry 80		4(2)	4(2)
Freehand Drawing 420....	(4)		
Mechanical Drawing 421..		(4)	
Woodwork 423	(6)		
Military Instruction.....	1(2)	1(2)	1(2)
.....			
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.....			
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.....			
.....			
.....			
.....			
Junior Year.			
Advanced Composition 222	1(2)	1(2)	1
Literature 223, 224.....	2	2	2
Public Speaking 234	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141.....			3
History 162.....	3	3	3
Psychology 1.....	4		
History of Education 2...		4	
Principles of Education 3.			4
German 362.....	3*	3*	3*
French 382	3*	3*	3*
Principles of Breeding 44.		3	
Micro Botany 65.....			2(4)**
Vegetable Pathology 66..			2(4)**
Geology 86.....	2(2)		
Organic Chemistry 87	4		
Bacteriology 100.....		(8)	(8)
Surveying 126			2(4)**
Military Instruction.....	R	R	R

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Analytics 402.....	5***		
Calculus 403.....		5***	4****
Mechanics and Sound 200, 203.....	3(4)		
Electricity and Magnetism 201, 204.....		3(4)	
Heat and Light 202, 205..			3(4)
Composition 221	1(2)	1(2)	1(2)
Public Speaking 233.....	(2)	(2)	(2)
Library Science.....			1(4)
History 161.....	5***	5***	4****
Latin 341.....	5***	5***	4****
German 361.....	3*	3*	3*
French 381.....	3*	3*	3*
Soils 22.....	2(4)**	2(4)**	
Vegetable Culture 280...		2(4)**	1(4)***
Plant Histology 61	1(6)**		
Plant Physiology 62		2(4)**	1(4)***
Zoology 241.....	2(4)**	2(4)**	2(4)**
Entomology 242			2(4)**
Chemistry 81.....	2(6)		
Quantitative Analysis 83		1(8)	
Mineralogy 85.....			1(4)***
Military Instruction.....	1(2)	1(2)	1(2)
Senior Year.			
English 225, 226, 227.....	(2)	(2)	1
English and Public Speaking 228, 235.....	2	4	3
Political Economy 142...	4	4	4
Political Science.....	3*	4*	3*
Advanced History.	3*	4*	3*
German 362.....	3**	3**	3**
French 382.....	3**	3**	3**
Farm Forestry.....			2(4)
Electives‡	12	9	7
Military Instruction.....	R	R	R
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*Alternative.

‡The electives may be selected from the following list: First Term, 5 periods in Chemistry 89 or Mathematics 403; 4 periods in Floriculture 303 or Mechanics 122; and 3 periods in Animal Husbandry 40 or Pomology 260; Second Term, 4 periods in Dairying 49 or Electricity 180 and 181; 3 periods in Grain Judging 25, Poultry 50 or Mechanics of Materials 125; and 2 periods in Landscape Gardening 300, Geology 86 or Mathematics 400; Third Term, 4 periods in Agronomy 20, Market Gardening 286, Floriculture 315 or Electricity 180 and 181; and 3 periods in Pomology 260 or 264, Steam Engines 428 or Farm Buildings 441.

†For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

CIVIL ENGINEERING COURSE.

This Course offers a young man an opportunity to obtain training in civil engineering which will enable him to engage in practical engineering work in the field or in the drafting room with the assurance that he has the necessary preparation to profit by the experience thus afforded; or which will entitle him to advanced standing, if he desires to pursue a more extended course at a technical school of a higher grade. The curriculum, as outlined, includes not only studies having cultural value, but the sciences which form the basis of engineering. Students who have found themselves de-

Civil Engineering Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Trigonometry 400	5	2	
Algebra 401		3	
Analytics 402			5
English 220,232	4(2)	4(2)	4(2)
History 160	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Chemistry 80		4(2)	4(2)
Engineering Drawing 120	(4)		
Surveying 121		2	(4)
Freehand Drawing 420	(4)		
Mechanical Drawing 421	(4)	(4)	(4)
Woodwork 423	(6)		
Military Instruction	1(2)	1(2)	1(2)
.....			
.....			
Junior Year.			
Calculus 403	5		
AdvancedComposition 222	1(2)	1(2)	1
Public Speaking 234	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141			3
Geology 86	2(2)	2	
Engineering Drawing 120		(6)	(8)
Surveying 121	(4)		
Mechanics 122	4		
Railway Engineering 123		3	3
Structural Design 124		2(4)	2(4)
Mechanics of Materials125		3	5
Practical Problems 127			(8)
Dynamos 182	3		
Electrical Laboratory 184	(4)		
Graphics 431		4	
Military Instruction	R	R	R

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Analytics 402	5		
Calculus 403		5	4
Mechanics and Sound 200, 203	3(4)		
Electricity and Magnetism 201, 204		3(4)	
Heat and Light 202, 205			3(4)
Composition 221	1(2)	1(2)	1(2)
Public Speaking 233	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Chemistry 81	2(6)		
Mineralogy 85			1(4)
Surveying 121	(4)	4	2(4)
Descriptive Geometry 424	(4)	3(4)	2(2)
Military Instruction	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225	(2)	(2)	1
Political Economy 142	4	4	4
Practical Problems 127	(8)	(4)	(4)
Concrete 129	4		
Hydraulics 130	4		
Estimates of Cost 131		1(4)	
Geodesy 132		3	
Highways 133			5
Contracts and Specifications 134			2
Structural Design 433	2(4)	2(4)	2(4)
Mechanics of Engineering 434	4	4	3
Hydromechanics 438		4	
Heating and Ventilation 442			2(4)
Military Instruction	R	R	R

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

ficient in ability to learn mathematics are not advised to enter an engineering course.

All engineering students in the Junior and Senior Classes are required to spend a portion of their time in the reading of the current engineering magazines.

In 1918 members of the Freshman Class taking this Course will be required at the close of the regular session to take 100 hours of field and office work in surveying. This summer work will be developed so as to include a specified amount of time at the close of the Sophomore and Junior years. Summer employment will be accepted as a substitute for this work if found to be equivalent.

ELECTRICAL ENGINEERING COURSE.

This Course was introduced because of the great demand for young men who are not only well trained in the practical construc-

Electrical Engineering Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Trigonometry 400	5	2	
Algebra 401		3	
Analytics 402			5
English 220, 232	4(2)	4(2)	4(2)
History 160	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Chemistry 80		4(2)	4(2)
Surveying 121			(4)
Freehand Drawing 420	(4)		
Mechanical Drawing 421	(4)	(4)	(4)
Technical Instruction 422	2		
Woodwork 423	(6)	(4)	
Military Instruction	1(2)	1(2)	1(2)
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.....			
.....			
Junior Year.			
Calculus 403	5		
AdvancedComposition 222	1(2)	1(2)	1
Public Speaking 234	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141			3
Mechanics 122	4		
Mechanics of Materials125		3	5
Dynamos 183	3	4	3
Electrical Laboratory 185	(8)	(4)	(8)
Batteries 186			2
Electric Machine Design 187			2(4)
Machine Design 429	1(4)	2(4)	
Machine Work 430		(4)	(4)
Graphics 431		4	
Military Instruction	R	R	R

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Analytics 402	5		
Calculus 403		5	4
Mechanics and Sound 200, 203	3(4)		
Electricity and Magnetism 201, 204		3(4)	
Heat and Light 202, 205			3(4)
Composition 221	1(2)	1(2)	1(2)
Public Speaking 233	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Chemistry 81	2(6)		
Electricity 180, 181		3(2)	3(2)
Descriptive Geometry 424	(4)	3(4)	2(2)
Blacksmithing 425	(4)		
Steam Engines 428			3
Military Instruction	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225	(2)	(2)	1
Political Economy 142	4	4	4
Hydraulics 130	4		
Electric Machine Design 187, 194	(4)		1(8)
Alternators 188	5	5	3
Electrical Laboratory 189	(8)	(8)	(8)
Electric Lighting 190	2	2	
Electric Power Plants 191		2	2
Telephones and Telegraphs 192, 193		2(2)	2(2)
Electric Railways 195			3
Heat Engineering 436	3		
Hydromechanics 438		4	
Military Instruction	R	R	R

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

tion and operation of electrical machines, but who have a thorough knowledge of the principles and laws controlling the phenomena and forces with which they have to deal.

The general plan of the Course is to make the student thoroughly acquainted with the scientific laws which are the basis of the pro-

fession, and at the same time to train him to adapt the laws to practice, to use his own judgment, and to apply honest and accurate methods in all his work.

The curriculum, as outlined, includes those studies which provide a broad general culture, as well as a good foundation for the engineering work which follows. From the beginning of the Second Term of the Sophomore year the electrical training extends continuously throughout the Course.

In 1918 members of the Freshman Class taking this Course will be required at the close of the regular session to take 100 hours of wood work and drawing. This summer work will be developed so as to include a specified amount of time at the close of the Sophomore and Junior years. Summer employment will be accepted as a substitute for this work if found to be equivalent.

MECHANICAL ENGINEERING COURSE.

The curriculum of the several years of this Course is outlined so as to give general culture as well as a proper foundation for the profession of mechanical engineering.

Young men without a natural taste for mathematics and the handling of tools are advised not to pursue this Course. The practical work of this Course is most thorough. The student is familiarized from the first with the reading of engineering drawings and with the use of tools and implements used in wood and iron work. He is given daily practice in the shops and is encouraged to develop whatever inventive talent he may have. Results have shown that students completing this Course have no difficulty in securing employment immediately upon graduation in the field of mechanics or mechanical engineering.

In 1918 members of the Freshman Class taking this Course will be required at the close of the regular session to take 100 hours of shop and office work. This summer work will be developed so as to include a specified amount of time at the close of the Sophomore and Junior years. Summer employment will be accepted as a substitute for this work if found to be equivalent.

Mechanical Engineering Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Trigonometry 400	5	2	
Algebra 401		3	
Analytics 402			5
English 220, 232	4(2)	4(2)	4(2)
History 160	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Chemistry 80		4(2)	4(2)
Freehand Drawing 420	(4)		
Mechanical Drawing 421	(4)	(4)	(4)
Technical Instruction 422	2		
Woodwork 423	(6)	(4)	(4)
Military Instruction	1(2)	1(2)	1(2)
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.....			
.....			
.....			
.....			
Junior Year.			
Calculus 403	5		
Advanced Composition 222	1(2)	1(2)	1
Public Speaking 234	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141			3
Mechanics 122	4		
Mechanics of Materials 125		3	5
Dynamos 182	3	4	
Electrical Laboratory 184	(4)	(4)	
Machine Design 429	1(4)	2(4)	3(8)
Machine Work 430	(4)	(4)	(12)
Graphics 431		4	
Experimental Engineering 432			(4)
Military Instruction	R	R	R

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Analytics 402	5		
Calculus 403		5	4
Mechanics and Sound 200, 203	3(4)		
Electricity and Magnetism 201, 204		3(4)	
Heat and Light 202, 205			3(4)
Composition 221	1(2)	1(2)	1(2)
Public Speaking 233	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Chemistry 81	2(6)		
Descriptive Geometry 424	(4)	3(4)	2(2)
Blacksmithing 425	(4)	(4)	
Technical Mechanics 426		2	
Foundry 427			(8)
Steam Engines 428			3
Military Instruction	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225	(2)	(2)	1
Political Economy 142	4	4	4
Hydraulics 130	4		
Experimental Engineering 432	(4)	(8)	(8)
Structural Design 433	2(4)	2(4)	3(6)
Mechanics of Engineering 434	4	4	3
Kinematics 435	1(4)		
Heat Engineering 436	3	4	3
Hydromechanics 438		4	
Heating and Ventilation 442			2(4)
Military Instruction	R	R	R
.....			

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

RURAL ENGINEERING COURSE.

This Course is offered to students who wish to become proficient in such branches of engineering as relate in particular to the problems of rural communities. The broad training offered in engineering is supplemented by instruction in those agricultural subjects which will give the student a greater breadth of view concerning rural problems requiring the services of an engineer, and, if he should elect to settle in the country for the practice of his profession,

will enable him to conduct his farming operations with pleasure and profit.

In 1918 members of the Freshman Class taking this Course will be required at the close of the regular session to take 100 hours of field and office work in surveying. This summer work will be developed so as to include a specified amount of time at the close of the Sophomore and Junior years. Summer employment will be accepted as a substitute for this work if found to be equivalent.

Rural Engineering Course.

Subject.	Term. I	Term. II	Term. III
Freshman Year.			
Trigonometry 400	5	2	
Algebra 401		3	
Analytics 402			5
English 220, 232	4(2)	4(2)	4(2)
History 160	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Chemistry 80		4(2)	4(2)
Surveying 121		2	(4)
Freehand Drawing 420	(4)		
Mechanical Drawing 421	(4)	(4)	(4)
Technical Instruction 422	2		
Woodwork 423	(6)		
Military Instruction	1(2)	1(2)	1(2)
.....			
.....			
Junior Year.			
Calculus 403	5		
Advanced Composition 222	1(2)	1(2)	1
Public Speaking 234	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141			3
Agronomy 20			3(2)
Animal Husbandry 45			(2)
Geology 86	2(2)	2	
Mechanics 122	4		
Structural Design 124		2(4)	2(4)
Mechanics of Materials 125		3	5
Dynamos 182	3	4	
Electrical Laboratory 184	(4)	(4)	
Batteries 186			2
Blacksmithing 425	(4)		
Machine Work 430			(8)
Graphics 431		4	
Military Instruction	R	R	R
.....			
.....			
.....			

Subject.	Term. I	Term. II	Term. III
Sophomore Year.			
Analytics 402	5		
Calculus 403		5	4
Mechanics and Sound 200, 203	3(4)		
Electricity and Magnetism 201, 204		3(4)	
Heat and Light 202, 205			3(4)
Composition 221	1(2)	1(2)	1(2)
Public Speaking 233	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Chemistry 81	2(6)		
Surveying 121	(4)	4	2(4)
Descriptive Geometry 424	(4)	3(4)	2(2)
Steam Engines 428			3
Military Instruction	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225	(2)	(2)	1
Political Economy 142	4	4	4
Soil Physics 22	2(4)	2(4)	
Grain Judging 25		(2)	
Vegetable Culture 280		2(4)	1(4)
Farm Forestry 320			2(4)
Practical Problems 127	(4)		
Concrete 129	4		
Hydraulics 130	4		
Highways 133			5
Electric Lighting 190	2		
Telephones and Telegraphs 192, 193		2(2)	
Farm Machinery 437	2(4)		
Hydromechanics 438		4	
Design of Farm Structures 439		2(4)*	2(4)*
Farm Machinery Design 440		2(4)*	2(4)*
Heating and Ventilation 442			2(4)
Military Instruction	R	R	R

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

ENGINEERING EDUCATION COURSE.

A substantial demand for teachers of the Manual Arts who have had a broad training in engineering, has led to the establishment of this Course. In addition to the instruction in engineering, a thorough training in pedagogy is offered. Since the need for such teachers is felt in urban and in rural communities, some opportunity is given the student when he enters the Senior class, to select those subjects in engineering which will best fit him for the solution of the problems of the community in which he wishes to practice his profession.

In 1918 members of the Freshman Class taking this Course will be required at the close of the regular session to take 100 hours of shop work and drawing. This summer work will be developed so as to include a specified amount of time at the close of the Sophomore and Junior years. Summer employment will be accepted as a substitute for this work if found to be equivalent.

Engineering Education Course.

Subject.	Term. I	II	III
Freshman Year.			
Trigonometry 400	5	2	
Algebra 401		3	
Analytics 402			5
English 220, 232	4(2)	4(2)	4(2)
History 160	3	3	3
German 360†	3*	3*	3*
French 380†	3*	3*	3*
Chemistry 80		4(2)	4(2)
Freehand Drawing 420	(4)		
Mechanical Drawing 421	(4)	(4)	(4)
Technical Instruction 422	2		
Woodwork 423	(6)	(4)	(4)
Military Instruction	1(2)	1(2)	1(2)
.....			
.....			
.....			
.....			
Junior Year.			
Calculus 403	5		
Advanced Composition 222	1(2)	1(2)	1
Public Speaking 234	(2)	(2)	(2)
Civil Government 140	3	3	
Business Law 141			3
Psychology 1	4(2)		
History of Education 2		4	
Principles of Education 3			4
Mechanics 122	4		
Mechanics of Materials 125		3	5
Surveying 126			2(4)
Electrical Laboratory 184	(4)	(4)	
Blacksmithing 425		(4)	
Machine Design 429	1(4)	2(4)	3(4)
Graphics 431		4	
Experimental Engineering 432			(4)
Military Instruction	R	R	R
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.....			
.....			
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.....			

Subject.	Term. I	II	III
Sophomore Year.			
Analytics 402	5		
Calculus 403		5	4
Mechanics and Sound 200, 203	3(4)		
Electricity and Magnetism 201, 204		3(4)	
Heat and Light 202, 205			3(4)
Composition 221	1(2)	1(2)	1(2)
Public Speaking 233	(2)	(2)	(2)
German 361	3*	3*	3*
French 381	3*	3*	3*
Chemistry 81	2(6)		
Electricity 180, 181		3(2)	3(2)
Descriptive Geometry 424	(4)	3(4)	2(2)
Blacksmithing 425	(4)		
Steam Engines 428			3
Military Instruction	1(2)	1(2)	1(2)
Senior Year.			
Special Composition 225	(2)	(2)	1
Political Economy 142	4	4	4
Secondary Education 4	3(2)		
Organization and Materials 5		3(2)	
Practical Problems 127	(4)	(4)	
Farm Drainage 128	(4)		
Concrete 129	4*		
Hydraulics 130	4		
Estimates of Costs 131		1(4)	
Highways 133			5*
Electric Lighting 190	2	2	
Telephones and Telegraphs 192, 193		2(2)	2(2)
Machine Work 430	(4)	(4)	(4)
Experimental Engineering 432			(4)
Structural Design 433	2(4)*		
Farm Machinery 437	2(4)*		
Hydromechanics 438		4	
Heating and Ventilation 442			2(4)
School Architecture 443			3(4)*
Advanced Patterns 444			(8)
Military Instruction	R	R	R

*Alternative.

†For present, students offering entrance credits in German will take French and vice versa.

R. Required. For further information see page 84.

SHORT WINTER COURSES IN ENGINEERING.

These courses are offered to those who for various reasons cannot attend the four year courses. They are thoroughly practical in their nature and exceedingly helpful when full advantage is taken of the instruction given. Folders giving the details of these courses will be sent upon request. The following short courses will be given in 1918:

One week's Course on Farm Machinery and Motors.

One week's Course on Farm Carpentry, Blacksmithing, Pipe Fitting, and the Use of Concrete on the Farm.

Three days' Course on the Building and Maintenance of Roads.

SUB-COLLEGIATE COURSE.

The work in this Course is designed to prepare students for the Freshman Class who have been unable to obtain elsewhere a complete preparatory course.

Sub-Collegiate Course.

Sub-Freshman Year.				Sub-Freshman Year.			
Subject.	Term.			Subject.	Term.		
	I	II	III		I	II	III
Algebra 405	4	4	4	History 164	3**	3**	3**
Plane Geometry 406	4	4		Latin 342	3**	3**	3**
Solid Geometry 407			4‡	German 363	4(1)*	4(1)*	4(1)*
Farm Arithmetic 408			4‡	French 383	4(1)*	4(1)*	4(1)*
Physics 206	4(1)	4(1)	4(1)	Physical Culture	(2)	(2)	(2)
English 231	4(2)	4(2)	4(2)	Military Instruction	(2)	(2)	(2)

*Alternative.

‡Solid Geometry must be taken by students preparing for Engineering Courses. Farm Arithmetic must be taken by students preparing for Agricultural and Horticultural Courses. Elective for other students.

GENERAL INFORMATION.

ADMISSION TO COLLEGE

GENERAL STATEMENT.

A candidate for admission to the College must present, together with his Scholastic Record, a certificate of good moral character; and if the candidate be from another school or college, the certificate must show that he left such institution in good standing.

METHOD OF ADMISSION.

There are two methods of gaining admission to the Freshman Class:

(1.) By Certificate.—The College will accept certificates from approved high schools of Maryland and the District of Columbia, and from accredited academies and preparatory schools of this State and other States. The certificates presented by the candidate must be officially certified by the principal of the school attended and must state in detail the work completed by the candidate.

Blank certificates conveniently arranged for the desired data will be sent upon application.

All admissions by certificates are regarded as merely provisional. That is, while a student presenting a proper certificate is admitted to such standing as it shows him entitled to, he may be required to take a special examination or to do special work in any subject in which his preparation proves to be unsatisfactory; or if, after a fair trial, he fails to maintain a standing in the class to which he was admitted, he may be dropped to a lower class.

(2.) By Examination.—Candidates not admitted by certificate will be required to stand written examinations upon the entrance subjects. These examinations will be held for 1917 from June 8th to 15th, inclusive, and on September 17th, 18th and 19th.

UNITS REQUIRED FOR ADMISSION.

A unit designates not less than four or five "periods" of classroom work of eight or ten "periods" of laboratory work per week, continued throughout the school year, each "period" being not less than forty minutes.

An applicant for admission to the Freshman Class must offer credit for fifteen (15) units of high school or other secondary school work. The units covering the fundamental subjects are specifically designated. The others may be selected from the tabulated list of electives.

A deficiency of three units will be allowed a candidate as conditions, but such conditions must be removed by the end of the Scholastic Year in which the candidate is admitted.

Distribution of the Fifteen (15) Units to be Offered in 1917 for Admission to the Several Courses.

Agronomy, Animal Husbandry, Agricultural Education, or Horticulture.		Biology, Chemistry, Canning, or General Science.		Civil Engineering, Electrical Engineering, Mechanical Engineering, Rural Engineering or Engineering Education	
Subject.	Value in Units.	Subject.	Value in Units.	Subject.	Value in Units.
Algebra	1½	Algebra	1½	Algebra	1½
Plane Geometry	1	Plane Geometry	1	Plane Geometry	1
				Solid Geometry or Plane Trigonometry	½**
English	3	English	3	English	3
History	2	History	2	History	2
Foreign Language or Agriculture	2	French or German	2	French or German	2
Physics (With Notes)	1	Physics (With Notes)	1	Physics (With Notes)	1
Electives from Tabulated list	4½*	Electives from Tabulated list	4½*	Electives from Tabulated list	4

*Students electing Latin in Freshman Class must offer two (2) units in Latin.
**It is preferred that Solid Geometry rather than Plane Trigonometry be offered.

The high schools of the State are primarily local institutions in which the curricula must be adapted to the needs of their respective communities. Therefore, in the correlation of their courses of study with the College Entrance Requirements, it has been necessary to permit prospective students to make a selection of a limited number of credits from the given list of electives.

List of Elective Units.

Group.	Subject.	Value of Subject In Units.	Maximum Number of Units to be Selected from An Group
Mathematics	Solid Geometry	½	1
	Plane Trigonometry	½	
	Farm Accounts	½	
History	Ancient	1	2
	European	1	
	General	1*	
	English	1	
	American	1**	
Foreign Language	Latin	1 to 2	
	French	1 to 2	
	German	1 to 2	
	Spanish	1 to 2	
Science	Chemistry (with notes)	1	4
	Agriculture	½ to 3	
	Botany	½	
	Zoology	½	
	Physiology	½	
	Physical Geography	½	
	Geology	½	
Industrial Subjects	Freehand Drawing	½ to 1	2
	Mechanical Drawing	½ to 1	
	Shop Work	½ to 1	

*Not to be offered in addition to Ancient and European History.
**May be offered if taken in latter half of high school course.

SUGGESTIONS FOR PREPARATION IN THE REQUIRED SUBJECTS.

MATHEMATICS.

Algebra to Quadratics. (One unit.) As treated in the algebras of Wells, Wentworth, Tanner, Fine, or an equivalent. The four fundamental operations; factoring; highest common factor and least common multiple; fractions (including their conception as ratios) and complex fractions; powers and roots; the solution of linear equations, both numerical and literal, and of problems depending on linear equations; radicals and the theory of exponents; and the solution of simple second degree equations in one unknown quantity by factoring.

Algebra from Quadratics. (One-half unit.) As treated in the algebras of Wells, Wentworth, Tanner, Fine, or an equivalent. Equations with one or more unknown quantities, to be solved by

the methods of linear or quadratic equations; ratio, proportion and variation; variables and limits; properties of series, including the binomial theorem for positive integral exponents, and the formulas for the nth term and sum of the terms of arithmetical and geometrical progressions with applications; logarithms.

Plane Geometry. (One unit.) As treated by Wentworth, McMahon, Phillips and Fisher, or an equivalent. The usual theorems and constructions, including the general properties of plane rectilinear figures, the circle and measurement of angles, similar polygons, areas, regular polygons and the measurement of the circle; the solution of original exercises, including loci problems; and the application to the mensuration of lines and plane surfaces. The student should be able to prove every statement made, going back step by step until it rests upon primary definitions or axioms.

Solid Geometry. (One-half unit.) As treated in Wentworth's or an equivalent text-book. In addition to the discussion of general theorems, special attention should be paid to the solution of problems.

Plane Trigonometry. (One-half unit.) This course should cover the field of plane trigonometry as given in Wentworth's or an equivalent text-book. It should include the solution of right and oblique triangles and special emphasis should be placed on the solution of practical problems, trigonometric identities, and trigonometric equations.

Farm Accounts. (One-half unit.) This course should extend over one-half year and treat of bookkeeping as it relates to farm life.

ENGLISH.

Preparation in English has two main objects: (1), command of correct and clear English, spoken and written; (2), power to read with intelligence and appreciation.

To secure the first end, training in grammar and the simple principles of rhetoric and the writing of frequent compositions are essential. The candidate must be able to spell, capitalize and punctuate correctly. He must show a practical knowledge of the essentials of English grammar, including ordinary grammatical terminology,

inflection, syntax, the use of phrases and clauses; a thorough training in the construction of the sentence; and familiarity with the simpler principles of paragraph division and structure.

To secure the second end the candidate is required to read the works named below under A and B. The list is intended to give the candidate the opportunity of reading, under intelligent direction, a number of important pieces of literature.

ENGLISH A. For reading and practice. (One and one-half units.) The candidate should read the works prescribed below with a view to understanding and enjoying them. He will be expected to show a reasonable degree of familiarity with their substance, and will be required to have a general knowledge of the History of English and American Literature.

For students entering in 1917: Shakespeare's "Merchant of Venice," "As You Like It," and "Julius Caesar"; Swift's "Gulliver's Travels"; Scott's "Ivanhoe"; Goldsmith's "Vicar of Wakefield"; Stevenson's "Treasure Island"; Macaulay's "Lays of Ancient Rome"; Eliot's "Silas Marner"; Longfellow's "Evangeline"; Lowell's "Vision of Sir Launfal"; Poe's Raven"; Gray's "Elegy Written in a Country Churchyard"; and such other texts as are prescribed by the State Board of Education in the course of study for the high schools of Maryland.

ENGLISH B. For study and practice. (One and one-half units.) The candidate should read the books presented below with the view of acquiring such knowledge of their contents as will enable him to answer specific questions with accuracy and some detail. The examination is not designed, however, to require minute drill in difficulties of verbal expression, unimportant allusions and technical details.

For students entering in 1917: Shakespeare's "Macbeth"; Milton's "L'Allegro," "Il Peneroso"; Tennyson's "The Holy Grail"; Macaulay's Essay on Johnson or Addison, or Carlyle's Essay on Burns; Washington's Farewell Address; Webster's First Bunker Hill Oration or Burke's Speech on Conciliation with America; Emerson's "Essay on Manners."

HISTORY.

ANCIENT HISTORY TO 300 A. D. (One unit.) If a single textbook is used, it should be West's Ancient World, Wolfson's Essentials in Ancient History, Morey's Outlines of Ancient History, or an equivalent.

EUROPEAN HISTORY, 476 A. D. TO 1648 A. D. (One unit.) Robinson's History of Western Europe or an equivalent. European History from the Fall of Rome to the end of the Thirty Years' War.

GENERAL HISTORY. (One unit.) Myer's, Fischer's or Colby's General History, or an equivalent.

ENGLISH HISTORY. (One unit.) Cheyney's A Short History of England, Andrew's History of England, Walker's Essentials in English History, Montgomery's English History, or an equivalent.

AMERICAN HISTORY. (One unit.) Channing's Student's History of the United States, McLaughlin's History of the American Nation, Hart's Essentials in American History, or an equivalent. The discovery, exploration and settlement of America; the colonial policy of England, culminating in the Revolution; the political, economic and social history of the United States since the adoption of the Constitution.

The entrance examinations in History will be so framed as to require comparison and the use of the judgment, rather than the mere use of the memory.

FOREIGN LANGUAGE.

LATIN. First Year. (One unit.) First Latin Book completed.

Second Year. (One unit.) Three Books of Caesar, or an equivalent.

Forms and constructions needed in texts from Standard Latin Grammar. Prose based on texts.

FRENCH. First Year. (One unit.) Aldrich and Foster's Foundations of French and French Reader, or their equivalents.

Second Year. (One unit.) Reading of four to five hundred pages of graduated texts.

GERMAN. First Year. (One unit.) Bacon's German Grammar, or an equivalent.

Second Year. (One unit.) Reading of about 300 pages of graduated texts.

SPANISH. First Year. (One unit.) Elementary grammar; reading about 100 pages of easy prose; simple composition and dictation.

Second Year. (One unit.) Reading of about 300 pages of graduated texts.

SCIENCE.

PHYSICS. (One unit.) As much as is contained in the text-books of Carhart and Chute, Hall and Bergen, Gage's Elements of Physics, Avery's Elements of Natural Philosophy, or an equivalent. Note books covering laboratory work, etc., must be submitted.

CHEMISTRY. (One unit.) Preparation should include the study of at least one standard text-book, to the end that the pupil may gain a comprehensive and connected view of the most important facts of elementary chemistry. The subject should be attempted only in schools which possess an adequate equipment; laboratory work is essential and original notes must be submitted; more importance will attach to descriptive chemistry than to analytical, and the student should become as familiar as possible with the commonest non-metals and metals, as well as their simpler compounds.

AGRICULTURE. (One-half to three units.) Courses in Agriculture should include class, laboratory, and field work in Soils and Fertilizers, Farm Crops, Farm Animals, and Horticulture. A special text should be used in the treatment of each subject.

BOTANY. (One-half unit.) As much as is contained in Gray's Lessons, Bailey's Elementary Botany, Bergen's Foundations, or an equivalent.

ZOOLOGY. (One-half unit.) The preparation in Zoology should include a general knowledge of common animals of the locality with regard to their ecological relations; the general study of the animal forms such as the Amoeba, a ciliate, an earth worm, insect, frog and mammal. He should have some work in the general physiology of these types and a comparison of life processes in animals and plants. The student should have such general knowledge of the animal kingdom, the characteristics of the Phyla and the principal

classes of animals as is given in Davison's Practical Zoology. The applicant must present an acceptable notebook covering field and laboratory work.

Physiology. (One-half unit.) The preparation should include the general facts of the anatomy, histology and physiology of the human body and the essentials of hygiene. A text-book, such as the first part of Hough and Sedgwick's The Human Mechanism, or an equivalent should be used in connection with charts and models.

Physical Geography. (One-half unit.) A study of the earth, atmosphere, waters and attendant phenomena; the distribution of both animal and vegetable life, and the various industries resulting from the development of the natural resources of the earth.

Text-books on Physical Geography by Gilbert, Davis, Fairbanks, Tarr, or an equivalent.

Geology. (One-half unit.) The student must show a knowledge of geology as treated in Scott's Introduction to Geology or an equivalent. Notes covering laboratory and field work must be submitted.

INDUSTRIAL SUBJECTS.

Shopwork. (One-half to one unit.) A candidate who offers shopwork as an entrance subject is asked to present a detailed statement from his instructor, setting forth the kind and amount of work done.

Drawing. (One-half to one unit.) A candidate must present a detailed statement from his instructor showing the kind and amount of work done and submit drawings done by himself.

ADMISSION TO OTHER CLASSES.

Applicants for Advanced Standing in any course, in addition to satisfying the requirements for admission to the Freshman Class, must pass an examination in the studies which have been pursued by the class for which they are candidates. Work done at a standard college is accepted when properly certified and found on examination to be equivalent in extent and quality to that required at this College.

EXAMINATIONS FOR ADMISSION TO ANY HIGHER CLASS will be held at the College in June and September at the same times as examinations for admission to the Freshman Class.

CANDIDATES FOR THE TWO-YEAR COURSE IN AGRICULTURE must be at least 16 years of age. They are also required to present certificates or pass examinations in subjects which are at least equivalent to those given in the seventh grade of the Maryland Public Schools.

CANDIDATES FOR THE SUB-FRESHMAN CLASS will be required to present certificates or to pass examinations in subjects as follows: Algebra as far as quadratics; two years of high school English or its equivalent, and four units in other subjects taught in the Maryland High Schools which are not given in the Sub-Freshman Class.

Students from newly acquired territory or any foreign country must have a local guardian appointed with parental powers, with whom the President can deal in any case of emergency. Students who cannot speak English are not desired, and are advised that satisfactory progress at this College on their part cannot be achieved until they have familiarized themselves partly, at least, with the English language.

EXAMINATIONS AND PROMOTIONS.

In order to pass from one class to the next higher, a student is required to pass an examination in each study pursued, by a mark of at least sixty per cent., and to have a combined mark in each branch (daily and examination) of at least seventy per cent.

A student will not be promoted if it is manifest that he cannot pursue successfully the advanced work.

REPORTS.

Detailed reports are sent to parents and guardians at the end of every term. These give the grade of the student in every branch of study, his attendance record and his conduct record with comment by the President upon each item.

Special reports of deficiencies will be sent to parents and guardians whenever deemed necessary.

GRADUATION AND DEGREES.

Degrees are granted by the Board of Trustees upon the recommendation of the Faculty.

All applications for degrees must be approved by the Faculty.

BACHELOR OF SCIENCE.

As a requisite for graduation the candidate for this degree must have completed the work previously outlined.

If a thesis is required it must be submitted to the head of the department in which the investigation is pursued, not later than May 15th.

MASTER OF SCIENCE.

The degree of Master of Science may be conferred as follows:

1. Upon persons who have taken the degree of Bachelor of Science in a recognized institution, and have pursued successfully at this College for one year a course of graduate study, satisfying the following requirements:

The course shall consist of a major subject and two minor subjects germane to the major subject and shall be approved by the professor in charge of the major subject.

At least one minor subject shall be in a different department from the major subject.

The course shall occupy not less than fifteen credit periods per term.

Not fewer than five credit periods per term shall be devoted to the minor subjects.

A thesis satisfactory to the professor in charge of the major subject shall be presented.

2. Upon college graduates of not less than two years' standing, who are employed in any of the departments of the College, including the Experiment Station, and who have completed the equivalent of the above course of study. Candidates under this clause must have their applications approved at least eighteen months before they contemplate receiving their degree.

3. Upon graduates of this College of not less than three years' standing, who having been connected with institutions of learning or research, where adequate facilities for advanced work are available, have completed a course equivalent to (1) and have presented a satisfactory thesis.

MECHANICAL ENGINEER.

The degree of Mechanical Engineer may be conferred as follows:

1. Upon graduates of this College of not less than three years' standing, who having been connected with institutions of learning or research, where adequate facilities for advanced work are available, have completed a course consisting of a major and two minor subjects, and presented a satisfactory thesis. The course of study shall be outlined by the heads of the Departments of Civil, Electrical and Mechanical Engineering.

2. Upon graduates of this College who have had three years' professional experience of an acceptable character. Such candidates must present a full report of such experience and such other information as to the qualifiations for the degree as may be found desirable, and in addition shall present a satisfactory thesis.

3. All candidates must be at least Junior members of the American Society of Mechanical Engineers. All applications for degrees must be approved twelve months prior to the date they contemplate receiving the degree, and the thesis must be presented at least one month prior to such date.

CIVIL ENGINEER.

The degree of Civil Engineer may be conferred upon any candidate who is a graduate of this College with the degree of Bachelor of Science in Civil Engineering, and has been engaged in engineering pursuits for not less than three years since graduation, provided:

1. That he shall be at least a Junior member of the American Society of Civil Engineers, or that he shall have been in responsible charge of work for at least two years.

2. That he shall accompany his application with a synopsis of the work upon which he bases his request.

3. That the Committee composed of the heads of the Civil, Electrical and Mechanical Engineering Departments, to whom his application shall be referred, shall consider him eligible.

4. That previous to receiving the degree he shall comply with such further conditions as the aforesaid committee shall impose.

ELECTRICAL ENGINEER.

The degree of Electrical Engineer may be conferred upon any candidate who is a graduate of this College with the degree of Bachelor of Science in Electrical Engineering, and has been engaged in engineering work for not less than three years since graduation, provided:

1. That he shall be at least an Associate Member of the American Institute of Electrical Engineers.

2. That his application be approved twelve months prior to the date he shall receive the degree.

3. That he shall present a satisfactory thesis.

4. That he shall present with his application a complete report of his engineering experience and an outline of his thesis.

5. That the Committee composed of the heads of the Civil, Electrical, and Mechanical Engineering Departments, to whom the application shall be referred, shall consider him eligible.

SCHOLARSHIPS.

High-School Scholarships.— To encourage *worthy young men* who desire a Collegiate Education, the Board of Trustees has established for each High School in Maryland and the District of Columbia, one scholarship *each year*,* to be awarded under the following conditions:

*This plan will be gradually put into effect as the present scholarships become vacant.

1.—The person awarded a scholarship must be a graduate of a high school and qualified to enter the Freshman Class (See Entrance Requirements, page 119), and must be of approved moral character and at least 15 years of age.

2.—The appointment to a scholarship shall be made by the School Superintendent, upon the recommendation and certification of the Principal of the High School.

The Principal of the High School may recommend one or more persons for appointment, with information as to the merits of each case. In making appointments, not only class standing, but inability to meet the financial expenses of an education should be given consideration.

3.—The appointment shall be made for the term normally required to complete the course selected.

4.—Each scholarship has the value of $50.00 per year. This amount will be credited on the holder's account.

5.—The scholarship will be forfeited by persistent indifference to scholastic work or by repeated disregard of the rules of discipline of the College.

6.—The scholarship will be forfeited in case the holder fails of promotion at the end of any scholastic year, unless there are extenuating circumstances.

Preparatory School Scholarships. There has also been established one scholarship *each year* for graduates of each Preparatory School in Maryland and the District of Columbia in which the standard is of such a character as to qualify the appointee for entrance to the Freshman Class. The conditions governing these scholarships are the same as for the High Schools except that the appointment shall be made by the Principal of the Preparatory School.

County Scholarships.—Counties which do not have a high school will be given one $50.00 scholarship each year, and the recipient may enter the Sub-Freshman class (See Entrance Requirements, page 126). The appointment to the scholarship is made by the County Superintendent after a competitive examination. In other respects the regulations governing this scholarship are the same as for the high-school scholarships.

Industrial Scholarships. For the encouragement of *worthy young men* of limited means towards getting a College education, a limited number of industrial scholarships have been established by the Board of Trustees to be awarded under the following conditions:

1.—The number of scholarships will depend upon the amount of service required.

2.—The value of the scholarship will be graduated according to the amount and character of the work performed, and will range from $40.00 per year upwards. The amount earned will be credited on the holder's account.

3.—The holder of such a scholarship will be required to render to the College certain specified services, such as work in the dining-room, on the corridors, in the library, etc.

4.—Such services will not as a rule prevent the holder from participating in military drill.

5.—Vacancies as they occur shall be filled by the President of the College and ratified by the Executive Committee of the Board of Trustees.

6.—The holder of an industrial scholarship: (a)—must be more than 15 years of age and of normal size, health and strength; (b)—must be of approved moral character as attested by some well-known resident of his locality; (c)—must be qualified to enter the Freshman Class of the College (See Entrance Requirements, page 119).

7.—The scholarship will be forfeited by persistent indifference to scholastic work or by repeated disregard of the rules of discipline of the College.

8.—The scholarship will be forfeited in case the services required of the holder are not satisfactory to those in charge of the work.

FACILITIES FOR RELIGIOUS WORSHIP.

The College is undenominational in character. The daily exercises of the College include religious worship in the College Chapel. Attendance is voluntary.

Students are encouraged to attend the church of their choice on Sunday mornings. There is an Episcopal church at College Park; and at Berwyn, one mile north, and at Riverdale, one mile south, are Presbyterian churches. In Hyattsville, two miles south, may be found Catholic, Episcopal, Presbyterian, Baptist and Methodist churches. In the city of Washington are churches of all denominations, and students may attend service in this city on Sunday mornings. Parents are urged to insist upon their sons attending the church of the faith of their parents.

COLLEGE REGULATIONS.

The attention of parents is earnestly called to the following rules in force at this College: The College authorities can succeed in conferring the maximum amount of training upon the student only with and by the active support and earnest co-operation of the parent. The President of the College is always ready and willing to discuss with parent or guardian any failures in a student's record, and correspondence on this subject is always appreciated.

No student will be accepted as a matriculate until the contract card containing the following agreement for matriculation is signed by parent or guardian, and received by the President of the College.

It is understood that the President of the College as the executive of the same, and acting for the Board of Trustees, a party to this contract, *has the right to ask the withdrawal of a student at any time, when in his judgment such withdrawal may be necessary for the interest either of the young man or of the institution which he attends. It is further understood that a parent or guardian can at any time withdraw his son or ward, subject to regulations herein set forth.*

A student manifesting indifference to the observance of the rules and regulations of the institution, or wanting in proper attention to the preparation of his work, will be cautioned to improve. Failing to do so his parents, upon notice given by the President, must withdraw their son.

A special pledge to refrain from what is popularly known as *"hazing,"* and taking unfair means in examinations is required of every applicant for entrance, before he will be allowed to matriculate. Parents should impress upon their sons that failure to live up to this pledge is a dishonor which unfits them to be longer students of the College. *"Hazing" is invariably punished by instant dismissal.*

Frequent absences from the College are invariably of great disadvantage to the student, in breaking in upon the continuity of his work and in distracting his mind from the main purpose of his attendance at the institution. Parents are therefore earnestly asked to refrain from granting frequent requests to leave the College.

Students will not be permitted to leave classes to answer telephone calls, unless they are urgent.

Students will not be permitted to make contracts or to sell any article to their associates without the approval of the President.

The College will not be responsible for articles left in the dormitories during vacation, nor for valuables left by students in their rooms at any time. They should be deposited with the College Treasurer, who will place them in the College safe and give a receipt therefor.

RULES ON COLLEGIATE ROUTINE, ENDORSED BY THE FACULTY.

1. All students on entering the collegiate course shall select a course of study from the curricula in the catalogue, which choice of study shall be approved by their parents or guardians. A student may not change his course of study except at the written request of his parents or guardians, and upon the approval of head of course abandoned, of the head of the course requested, and of the Committee on Courses of Study.

2. No special courses are permitted save by the consent of the Committee on Courses of Study. A certificate awarded attesting work in a special course will bear neither the College Seal nor the signature of the Chairman of the Board of Trustees.

3. To attain proficiency an examination grade of at least 60 per cent. and a term average of 70 per cent. are required. In computing averages the daily grade is computed at 2 and the examination grade at 1. In computing yearly averages a weight is given each subject according to the mean number of periods per week involved; theoretical periods are given a value, 2; practical periods, 1.

4. A student may be required to take an oral examination at any time within ten days after a written examination.

5. An examination paper containing erasures or showing alterations may be rejected and a new examination ordered at the discretion of the Instructor in charge.

6. A student who uses unfair means in examinations shall be liable to suspension or dismissal.

7. Any student failing in a subject on his first examination will be required to make arrangements with the Dean of his Division at the beginning of the following term for the removal of the condition during that term. He will not be allowed to take more than two re-examinations unless he shall have extra and special work approved by the Dean of the Division. He must pay a fee of $1.00 for each examination taken after the first.

8. One re-examination only in any one subject shall be permitted to Seniors between the final examination and commencement.

9. A student may not be promoted if conditioned in more than one-fifth of the credit periods required for a year's work. A credit period is one theoretical period or two practical periods per week.

10. A student shall not be promoted if he has a condition of more than one year's standing.

11. No student will be permitted more than two weeks at the beginning of the scholastic year in which to remove conditions which prohibit him from entering the next higher class.

12. An absence the day preceding or following a holiday will count as two.

13. Candidates for graduation must have satisfied the requirements of the Military Department unless excused from military instruction. Students thus excused must have performed work equivalent to that given in the Military Department.

Students will not be permitted to leave classes to answer telephone calls, unless they are urgent.

EXPENSES.

SUMMARY. The details concerning the items of expense incurred by a student attending the College will be found in the paragraphs immediately following the tabulated summary. Although the cost of board and lodging for students living outside of the College Dormitories is not given, it should not vary in any marked degree from the amount shown. Extravagance is discouraged, but no attempt is made to stipulate the amount which should be allowed for incidental personal expenses. It is suggested, however, that for members of the lower classes in particular the weekly allowance for spending money at College be no greater than it is at home. Certain fees which do not apply to all students, such as the Diploma fee, have been omitted from the summary.

SUMMARY OF EXPENSES.

(For students entering in September.)

ITEM.	COST.			
	First Term.	Second Term.	Third Term.	Total.
Fixed Charges	$18.00	$16.00	$16.00	$50.00
Laboratory Fee*	4.00	4.00	4.00	12.00
Damage Fee†	5.00			5.00
	27.00	20.00	20.00	67.00
Uniform (Complete)‡	26.50			26.50
	53.50	20.00	20.00	93.50
Board, Lodging and Laundry§	75.00	60.00	55.00	190.00
Total	$128.50	$80.00	$75.00	$283.50

*Not charged to students in the Sub-Freshman Class.
†Unexpended portion refunded at end of year.
‡As a rule students do not find it necessary to purchase a complete new outfit each year. Prices subject to change from year to year.
§Average amount.

Fixed Charges.— Tuition is free. There are, however, the following fixed charges which must be paid by each student:

ITEM.	COST.
Incidentals.—A part payment toward janitor service; heating and lighting recitation and public rooms; laboratories and library; medical attention; etc	$30.00
Physical Culture, Gymnasium and Athletics	10.00
Book Rental	10.00
Total	$50.00

The charges are payable in advance as follows: $18.00 on entrance, $16.00 at the beginning of the second term, and $16.00 at the beginning of the third term.

Laboratory Fee.—A charge is made against each student in the four year and two year Courses for outfit, material used, and ordinary wear and tear in the courses involving work in the laboratory, shop, or field. As this fee is small and generally covers only in

part the actual outlay, no portion of it will be returned. An extra charge will be made for excessive use of material or destruction of apparatus, etc. The total amount of this fee is $12.00 per year or $4.00 per term.

This fee for each term must be paid in advance and no student will be allowed to take a course in the laboratory, shop, or field until it is paid.

Damage or Caution Money.—A deposit of $5.00 is required of all students at time of entrance as a guarantee against damage to property. Unused damage money is returned to the student at the end of the year.

Uniform.—Instruction in military tactics is prescribed in the "Land Grant" Act of 1862. Students are required to appear in uniform at all military formations. This uniform is made of the best quality of Charlottesville gray cloth. It is furnished, under a special contract, at a very low price. The cost of each article and the total cost is as follows:

ITEM.	*COST.
One (1) gray fatigue blouse	$8.50
Two (2) pair gray fatigue trousers	11.00
Two (2) gray shirts	4.00
One (1) gray fatigue cap	1.50
One (1) pair canvas leggins	0.80
One (1) harness leather belt	0.50
One (1) black four-in-hand tie	0.20
Total	$26.50

*Prices subject to change from year to year.

If the uniform is given careful usage, it will not be necessary to purchase a complete new outfit each year.

Measures for this uniform are taken as soon as the student arrives at the College and fit is guaranteed.

A deposit of at least 25 per cent. for this uniform must be made with the Treasurer when the measure is taken, as no uniforms will be ordered until the money has been deposited for the same. The uniform must be paid for in full before it is delivered. No uniform is paid for until it is approved by the Professor of Military Science and Tactics.

Registration Fee.—This fee for all except graduate students, is included in the fixed charges. For graduate students this fee is $5.00, payable at the time of registering.

Diploma.—A fee of $5.00 for the Diploma will be collected from each student to whom a Bachelor's degree is granted. A fee of $10.00 for the Diploma will be collected from each student to whom an advanced degree is granted.

Certificate.—A fee of $3.00 will be collected for each Certificate issued to students who have completed the two-year Course.

Dormitory, Dining Hall and Laundry. Students who are assigned rooms in the College Dormitories and board in the College Dining Hall are charged as follows:

ITEM.	COST.
Room and furniture rent $1.00 per week or for College year (36 weeks)	$35.00†
Board, $4.00 per week or for College year (36 weeks)*	140.00
Laundry, $0.50 per week or for College year (36 weeks)	15.00
Total	$190.00

†Average.
*If meals are served during any College recess an extra charge will be made for them.

Payments on this account are to be made as follows: $75.00 on entrance, $60.00 at the beginning of the second term, and $55.00 at the beginning of the third term.

Any student who has not paid for his room, board, and laundry within five (5) days after the date upon which payment is due will be required to give up his room in the dormitory and will be excluded from the dining hall until payment is made.

Additional Information.—A deposit of $10.00 is required of each student desiring to reserve a room in one of the College Dormitories. Room reservations will be made on and after June 1st of each year until all the available rooms are taken. Unless special arrangements are made all reservations will be canceled on the opening day in September. The deposit of $10.00 which normally will be credited to the account of the student, will be forfeited if he fails to report in September. No special room may

be reserved, as all of them afford approximately the same comfort and convenience. An effort is made, however, to comply with the desire of the student making a reservation in so far as the conditions will permit. Other things being equal, old students are given the preference in the assignment of rooms.

Students entering College after November 1st or withdrawing prior to the close of the Scholastic Year will be required to pay for the time they are in attendance during the incomplete term as follows:

The rate of fixed charges is $7.00 per month.

The rate for room, board, and laundry is $25.00 per month.

All other charges are as previously indicated.

Students withdrawing more than two weeks after entrance will be charged for at least one month's attendance.

Students withdrawing less than two weeks after entrance will be charged at the rate of $2.00 per day.

Students rooming outside may obtain board and laundry from the College at the same rates as those living in the College Dormitories.

Day students may get lunch at noon at the lunch counter at nominal prices.

Charges against students are continued until formal withdrawal has been made.

No student will be promoted to another class, and no diploma will be conferred upon, nor any certificate issued to a student who is in arrears in his account with the College.

A student's college expenses are payable in advance. Bills will be presented ten (10) days before the date upon which payment is due. If these bills are not settled within five (5) days after the date set for payment, they will be subject to draft. If this draft is not honored, the student's connection with the College will be terminated until all accounts are satisfied.

In cases of illness, requiring a special nurse and medical attention, the expenses must be borne by the student.

Students will be admitted free of cost to membership in College Athletic Association.

All College property in the possession of the individual student, such as his room, furniture, books, apparatus and military equipment, will be charged against him, and the parent or guardian must assume responsibility for its return without abuse to the proper department at the end of each scholastic year, at which time the account will be cancelled. If abused, the cost of replacing or repairing the abused articles must be paid by the parent or guardian.

Damage to College property in public places in the building and on the grounds by the student will be charged to the whole student body, pro rata, unless the offender is known. In such cases, the whole expense of repairing or replacing the damaged property will be charged to the parent or guardian of the offending party. The matriculation of a student is evidence of the acceptance of this regulation.

All students assigned to Dormitories are required to provide themselves with the following articles, to be brought from home or purchased on arrival:

1 pair blankets (for single bed, 3 ft.x6 ft.).
2 pairs sheets (for single bed).
4 pillow cases.
6 towels.
8 table napkins.
1 pillow.
2 clothes bags.
1 broom.
1 dust pan.

ACKNOWLEDGMENTS.

MEDALS.—The authorities of the Institution take this opportunity to express their appreciation of the courtesy of their friends in establishing the following, for competition:

William Pinkney Whyte Medal, for excellence in Oratory, offered by Hon. Isaac Lobe Straus, of Baltimore, Md.

James Douglas Goddard Memorial Medal, to student of Prince George's county making the highest average in studies, offered by his sister, Mrs. Annie K. Goddard James, of Washington, D. C.

A Silver Cup, to the Literary Society winning the inter-Society Debate, offered by Dr. H. J. Patterson, of College Park, Md.

STUDENT ORGANIZATIONS.

Students' clubs for religious, social, literary and athletic purposes are encouraged as a means of creating class and college pride, and developing an *esprit de corps* among the students. Each class has its own organization, in which matters relating to the class are discussed and directed. Officers are elected and the unity of the class preserved. This has been found to be a decided aid to discipline and tends to raise the standard of student honor.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

Much encouraging work has been done by this organization during the past year, and gratifying interest has been shown in the meetings.

OFFICERS.

President, G. M. Merrill.
Vice-President, H. R. Shoemaker.
Recorder, H. Remsburg.
Treasurer, R. S. Dearstyne.

LITERARY SOCIETIES.

These societies are invaluable adjuncts to college work. Through them a knowledge of parliamentary law is gained, as well as a readiness of expression and activity in thought, qualities particularly valuable to the American citizen.

The literary society work is under the general supervision of the Professor of Public Speaking, who is always ready to advise with the members in matters of parliamentary law and train them in the delivery of their orations and debates.

POE SOCIETY.

President, G. M. Merrill.
Vice-President, J. A. Bromley.
Secretary, W. D. Gray.
Treasurer, F. D. Day.
Critic, M. J. B. Ezekiel.

NEW MERCER SOCIETY.

President, D. J. Howard.
Vice-President, H. R. Shoemaker.
Secretary-Treasurer, M. D. Engle.
Critic, L. H. Haslup.

ENGINEERING SOCIETY.

One of the newest and most beneficial additions to M. S. C. A. is the Engineering Society. Organized in September, 1912, it proved an immediate success, gratifying a long-felt and much-needed want on the part of the engineering students. The general object of the Society is the cultivation of a more active interest in engineering work, while its special aim is to give the student the opportunity to discuss the line of work in which he is interested and to become more accustomed to presenting his ideas. Inasmuch as the Society takes in all members of the Senior and Junior Classes in the Civil, Electrical and Mechanical Engineering Courses, a larger opportunity for acquiring technical knowledge outside of one's own course is offered.

The Society meets twice a month. Papers are presented at alternate meetings by Engineers in practice and by the students themselves.

OFFICERS.

President, H. Smith.
Vice-President, A. V. Williams.
Secretary-Treasurer, M. A. Pyle.

THE LIEBIG CHEMICAL SOCIETY.

The Liebig Chemical Society was organized to satisfy a much-felt need. The object of the Society is to have the various chemical problems of the day, discussed by men who have specialized in the different branches of Chemistry, or by the members themselves. This tends to develop a keener interest in Chemistry, and also to broaden the student along Chemical lines.

Membership in this Society is open to all members of the Sophomore, Junior and Senior Classes, who are specializing in Chemistry.

OFFICERS.

President, C. G. Donovan.
Vice-President, L. J. Gilmour.
Secretary, C. S. Elliot.
Treasurer, S. S. Ternent.

AGRICULTURAL CLUB.

OFFICERS.

President, W. D. Gray.
Vice-President, C. H. Fuchs.
Secretary, H. R. Shoemaker.
Treasurer, W. H. Carroll.

ROSSBOURG CLUB.

The social man is a necessity—hence this organization is encouraged and supported by the President and Faculty. The entertainments have been marked by a spirit which emphasizes the wisdom of its organization and justifies its encouragement.

OFFICERS.

President, A. V. Williams.
Vice-President, C. H. Fuchs.
Secretary, H. R. Shoemaker.
Treasurer, W. D. Gray.

REVEILLE.

The "Reveille" is the College annual, edited entirely by the Senior Class. Nineteen editions of the "Reveille" have appeared and each has been characterized by a gratifying improvement in the standard both of originality and expression.

EDITORIAL STAFF.

Editor-in-Chief, L. R. Haslup.
Associate Editors, H. R. Shoemaker, H. B. Derrick, W. F. Gilpin, D. J. Howard, R. D. Watson, A. H. Sellman, J. Donnet, C. H. Fuchs.
Business Manager, S. W. Ruff.
Assistant Business Manager, H. Smith.
Treasurer, C. J. Donovan.

MARYLAND STATE WEEKLY.

The "Maryland State Weekly" is the College newspaper, and is published every week during the scholastic year.

EDITORIAL STAFF.

Editor-in-Chief, H. R. Shoemaker.
Local Editor, G. M. Merrill.
Athletic Editor, W. Wilde.
Assistant Local Editors, M. A. Pyle, E. B. McKinley.
Sophomore Editor, T. V. Dowin.
Cartoonist, A. S. Stager.
Business Manager, G. F. Eppley.
Assistant Business Managers, C. E. Johnson, W. H. Carroll.

ATHLETIC ASSOCIATION.

The Athletic Association is an organization composed of the student body, with membership open to the Alumni Association, the Faculty, and Board of Trustees. It is an incorporated body with a governing board of seven. The object of the Association is the promotion of athletics in general, the supervision of all athletic exercises and sports, and the development of athletic and Col-

lege spirit. The management of the Association is vested in a board of seven, on which are: the Director of Athletics; two members of the Alumni Association (elected at the annual meeting of that body); two members of the Faculty, appointed by the President of the College, and two members of the student body, elected at an annual meeting of the Athletic Association. The officers of the Association are students. Eligibility of students for membership on teams in intercollegiate competition is determined on a very strict basis in the By-Laws.

OFFICERS.

President, H. B. Derrick.
Vice-President, L. D. Oberlin.
Secretary, M. A. Pyle.
Treasurer, W. F. Mornhinweg.

ATHLETIC COUNCIL.

The Athletic Council, in conjunction with the Student Athletic Association, manages all athletic affairs. It consists of seven members of the Faculty, appointed by the President, and five students, namely, the managers of the football, baseball, track and tennis teams, and the President of the Athletic Association.

THE ORATORICAL ASSOCIATION OF MARYLAND COLLEGES.

The Maryland State College of Agriculture is a member of this Association, which is composed of St. John's College, Washington College, Western Maryland College and Maryland State College of Agriculture. Contests are held annually at these colleges in rotation, and a marked improvement is to be observed as a result of its organization.

BOARD OF PROCTORS.

This Board consists of a limited number of Senior students who have charge of the students in dormitory and on the campus. They adjust all minor matters of discipline, grant temporary leaves of absence, inspect student quarters and are responsible for the general order and physical condition of the dormitories.

PROCTOR STAFF.

Chief Proctor, H. Smith.
Associate Proctors, W. D. Gray, H. B. Derrick, C. C. Tarbutton.

STUDENTS' CONFERENCE COMMITTEE.

This Committee is composed of a certain number of representatives from each class and a number of the members of the Faculty. The object of this Committee is to establish a definite relationship between the Faculty and the student body.

COUNTY CLUBS.

These Clubs are formed for the purpose of bringing together students from the same County to discuss the affairs of the County. From these Clubs the students acquire valuable knowledge concerning their home County.

THE ALUMNI ASSOCIATION.

An Institution can largely be judged by the character of its Alumni. Their success in life is the Institution's pride. The work of the Alumni of a College is its greatest asset. M. S. C. A. is fortunate in having among its Alumni, men who have attained notable achievements in Agriculture, Engineering and Science. M. S. C. A. Alumni can be found holding prominent positions in all walks of life.

While for many years the Alumni, through their Association, have taken an active interest in the growth and development of the Institution, it is pleasing to state that this interest has been greatly increased during the past two or three years and, since the recent great fire at the College, the Association has taken active steps to aid the Board of Trustees and Faculty in the rehabilitation of the College.

One of the cherished hopes of the Association, that of having direct representation on the Board of Trustees, has been attained in the appointment of two members of the Alumni Association, by

the Governor of the State, as Trustees of the College. The attainment of this end will naturally greatly increase the enthusiasm and interest of the members of the Association in co-operating more closely than ever with the College authorities in increasing the scope and usefulness of the Institution.

The Alumni Association continues to offer a medal to the debating societies.

The members have also greatly aided in the development of athletics and especially in conducting the joint athletic meets, which were held at the College during the last four years.

The Alumni also co-operate in the publishing of the "Maryland State Weekly."

The officers of the Alumni Association for the present year are: President, F. P. Veitch, '91; Vice-President, R. L. Mitchell, '02; Secretary-Treasurer, W. M. Hillegeist, '12; Executive Committee, members at large, J. N. Mackall, '05; Wellstood White, '05; Alumni Athletic Board, Wellstood White, '05; William P. Cole, Jr., '10.

Graduates and members of the Association are requested to keep the Secretary-Treasurer, W. M. Hillegeist, College Park, Md., informed of any change in address. Any information concerning the older graduates which will enable the officers to locate and communicate with them will facilitate their efforts and will tend to further the success of the Association.

DEGREES CONFERRED JUNE 7th, 1916.

Honorary.

DOCTOR OF LAWS.

HIS EXCELLENCY, EMERSON C. HARRINGTON
CARL R. GRAY, BALTIMORE COUNTY, MD.
ROBERT CRAIN, CHARLES COUNTY, MD.
ORVILLE E. WELLER, BALTIMORE, MD.

DOCTOR OF SCIENCE.

W. T. L. TALIAFERRO, COLLEGE PARK, MD.

CIVIL ENGINEER.

R. KEITH COMPTON, BALTIMORE, MD.

In Course.

MECHANICAL ENGINEER.

HARRY DORSEY WATTS, BALTIMORE, MD.

BACHELOR OF SCIENCE.

AGRICULTURAL EDUCATION.

WILLIAM ALBURTIS BROCKWELL, WASHINGTON, D. C.
FREDERICK GRANT LODGE, MCCONNELLSBURG, PA.
RALPH FRANK MCHENRY, FREDERICK COUNTY, MD.

ANIMAL HUSBANDRY.

WHITNEY JENNINGS AITCHESON, MONTGOMERY COUNTY, MD.
ROBERT STEINMETZ BAINS, WASHINGTON, D. C.
STANLEY EVERETT DAY, BALTIMORE, MD.
LEWIS WILSON ERDMAN, BALTIMORE, MD.
BURTON ANDREWS FORD, BALTIMORE, MD.
EDWARD GERHARDT KNATZ, JR., BALTIMORE COUNTY, MD.
PAUL HOUSTON MORRIS, CHARLES COUNTY, MD.
JOHN ALBERT REISINGER, MONTGOMERY COUNTY, MD.
LEROY CHOWNING TOWLES, JR., PRINCE GEORGE COUNTY, MD.

HORTICULTURE.

LESLIE EVERETTE BURLINGAME, WASHINGTON, D. C.
KENNETH GRACE, TALBOT COUNTY, MD.
KERCHEVAL EVANS SMITH, WASHINGTON, D. C.

CHEMISTRY.

LESLIE EDWARD BOPST, FREDERICK COUNTY, MD.
JOHN DOMINICK BOWLING, JR., PRINCE GEORGE COUNTY, MD.
JAMES BRADLEY, ALLEGANY COUNTY, MD.
KENNETH THOMPSON KNODE, MARTINSBURG, W. VA.
CHARLES EARL SANDO, WASHINGTON, D. C.
EDWIN ANDREW TAYLOR, WORCESTER COUNTY, MD.
ROBERT WHITE, PRINCE GEORGE COUNTY, MD.

CIVIL ENGINEERING.

WILLIAM MCLEAN, BALTIMORE, MD.
LEONARD C. WILSON, NOTTINGHAM, PA.

ELECTRICAL ENGINEERING.

EDWARD RUSSELL HINDMAN, CECIL COUNTY, MD.
FREDERICK JOSEPH MCKENNA, WOONSOCKET, R. I.
FREDERICK JAMES STEINMETZ, BALTIMORE, MD.

MECHANICAL ENGINEERING.

GEORGE BROOKE DORSEY GRAY, CALVERT COUNTY, MD.
SAMUEL EARL GRIFFIN, HOWARD COUNTY, MD.
JOHN CARMAN STERLING, SOMERSET COUNTY, MD.

CERTIFICATES IN TWO-YEAR COURSES ISSUED JUNE 7th, 1916.

AGRICULTURE.

SAMUEL WALKER BEALL, PRINCE GEORGE COUNTY, MD.
JOSEPH PAUL BROWN, QUEEN ANNE COUNTY, MD.
GEORGE CLEMENTS, KENT COUNTY, MD.
HARRY WILSON MCDONALD, ALLEGANY COUNTY, MD.
EGBERT WILLIAMS THOMPSON, WASHINGTON, D. C.
ALLEN STANFORD TREVETT, RICHMOND, VA.
HARRY BAUGHER WARD, BALTIMORE, MD.

HORTICULTURE.

ROBERT ADELBERT HUNGERFORD, CHARLES COUNTY, MD.
EDWARD WILMARTH LAPHAM, CAROLINE COUNTY, MD.
* JAMES EDWARD MILLS, PRINCE GEORGE COUNTY, MD.
JOHN EARL TALIAFERRO, WARE NECK, VA.
JOHN WILLIS VAN HORN, CHICAGO, ILL.

Testimonials of Merit Awarded June 7th, 1916.

For distinguished achievement in the promotion of the agricultural interests of Maryland:

W. F. ALLEN, WICOMICO COUNTY, MD.

For his efforts in promoting Horticulture.

HARVEY J. SPEICHER
HENRY M. SPEICHER } , GARRETT COUNTY, MD.

For their efforts in promoting Animal Industry.

ERNEST H. BRINKLEY, PRINCE GEORGE COUNTY, MD.

For his efforts in promoting Agriculture.

* Awarded February 28th, 1917

Medals and Prizes Awarded June 7th, 1916.

For excellence in the Agricultural Education Course; offered by the College:

W. A. BROCKWELL, WASHINGTON, D. C.

Honorable Mention.

R. MCHENRY, FREDERICK COUNTY, MD.
F. G. LODGE, MCCONNELLSBURG, PA.

For excellence in the Animal Husbandry Course; offered by the College:

L. W. ERDMAN, BALTIMORE, MD.

Honorable Mention.

W. J. AITCHESON, MONTGOMERY COUNTY, MD.

For excellence in the Horticultural Course; offered by the College:

K. E. SMITH, WASHINGTON, D. C.

For excellence in the Chemical Course; offered by the College:

ROBERT WHITE, PRINCE GEORGE COUNTY, MD.

Honorable Mention.

K. T. KNODE, MARTINSBURG, W. VA.
C. E. SANDO, WASHINGTON, D. C.

For excellence in the Civil Engineering Course; offered by the College:

L. C. WILSON, NOTTINGHAM, PA.

For excellence in the Electrical Engineering Course; offered by the College:

E. R. HINDMAN, CECIL COUNTY, MD.

For excellence in the Mechanical Engineering Course; offered by the College:

J. G. STERLING, SOMERSET COUNTY, MD.
G. B. GRAY, CALVERT COUNTY, MD.

For excellence in the Two-Year Course in Agriculture; offered by the College:

H. B. MCDONALD, ALLEGANY COUNTY, MD.

For excellence in the Two-Year Course in Horticulture; offered by the College:

J. W. VAN HORN, CHICAGO, ILL.

For excellence in Debate; offered by the Alumni Association:

WALTER MEASDAY, JR., BROOKLYN, N. Y.

The Goddard Medal, for excellence in Scholarship and moral Character; offered by Mrs. Annie K. Goddard James:

J. D. BOWLING, JR., PRINCE GEORGE COUNTY, MD.

The William Pinkney Whyte Medal, for excellence in Oratory; offered by Isaac Lobe Straus, Esq.:

R. F. MCHENRY, FREDERICK COUNTY, MD.
WALTER MEASDAY, JR., BROOKLYN, N. Y.

"President's Cup," for excellence in Debate; offered by Dr. H. J. Patterson:

POE LITERARY SOCIETY.

CADET BATTALION ORGANIZATION.

BATTALION STAFF.

G. M. Sturgis.....Major.
H. Smith.....First Lieutenant and Adjutant.
W. D. Gray.....Second Lieutenant and Quartermaster.
F. B. Rakemann.....Sergeant Major.

BAND OFFICERS AND NON-COMMISSIONED OFFICERS.

H. Smith.....Adjutant, Commanding.
L. Burritt.....First Lieutenant and Chief Musician.
J. Donnett.....Second Lieutenant.
B. Dubel.....Second Lieutenant.
A. H. Sellman.....Second Lieutenant.
P. V. Horn.....Drum Major.
P. E. Clark.....Sergeant.
R. S. Eyre.....Sergeant.
J. H. Remsburg.....Sergeant.
R. G. Stuntz.....Sergeant.
J. I. Conover.....Corporal.

COMPANY OFFICERS AND NON-COMMISSIONED OFFICERS.

Company "A."	Company "B."	Company "C."
	CAPTAINS.	
J. A. Bromley.	B. F. Senart.	A. V. Williams.
	FIRST LIEUTENANTS.	
I. Coggins.	R. D. Watson.	H. W. Fristoe.
	SECOND LIEUTENANTS.	
H. B. Derrick.	F. A. Korff.	D. J. Howard.
	FIRST SERGEANTS.	
L. M. Childs.	M. A. Thorne.	C. H. Bacon.
	QUARTERMASTER SERGEANTS.	
S. S. Ternent.	M. A. Pyle.	M. D. Engle.
	COLOR SERGEANTS.	
F. M. Haig.		E. B. McKinley.
	SERGEANTS.	
P. V. Horn.	E. L. Wilde.	B. Davison.
G. F. Eppley.	E. O. Simpson.	C. S. Elliott.
W. P. Williams.	W. H. Carroll.	W. V. Cutler.
	CORPORALS.	
F. S. Chichester.	K. W. Babcock.	B. L. Burnside.
P. W. Chichester.	G. S. Clark.	J. H. Starr.
G. W. Clendaniel.	F. A. Dawson.	R. W. Axt.
J. Conyngton.	I. W. Gutberlet.	A. N. Pratt.
E. W. Hand.	J. M. Richmond.	M. C. Brown.
R. R. Lewis.	E. M. Sawyer.	H. L. Rocklin.
	BUGLERS.	
L. T. Prentice.	A. S. Jones.	F. F. Lambdin.
W. B. Matthews.	E. W. Higgins.	F. Roberts.

ROSTER OF MATRICULATES.

SESSION 1916-17.

NAME.	POST OFFICE.	COUNTY.
GRADUATE STUDENTS.		
ALFORD, G. H.,	Hyattsville,	Prince George.
ALLEN, H. H.,	Baltimore,	*Baltimore City.*
ANSPON, B. W.,	College Park,	Prince George.
BALLARD, W. R.,	College Park,	Prince George.
DRAKE, HARLEY B.,	Washington,	*District of Columbia.*
GRACE, K.,	Easton,	Talbot.
GRAHAM, J. J. T.,	Hyattsville,	Prince George.
HAYMAN, E. T.,	Annapolis,	Anne Arundel.
JARRELL, T. D.,	College Park,	Prince George.
LINHARDT, C. L.	Baltimore,	*Baltimore City.*
MCCONNELL, J. E.,	Anderson,	*South Carolina.*
MONROE, J. F.,	Snow Hill,	Worcester.
MORRIS, P. W.,	Faulkner,	Charles.
PFINSTAG, V. R.,	College Park,	Prince George.
SHAW, S. B.,	College Park,	Prince George.
SNYDER, W. P.,	College Park,	Prince George.
WHITE, ALBERT,	College Park,	Prince George.
SENIOR CLASS.		
BROMLEY, J. A.,	Stockton,	Worcester.
BURRITT, L.,	Washington,	*District of Columbia.*
COGGINS, I.,	Washington,	*District of Columbia.*
DEARSTYNE, R. S.,	Port Chester,	*New York.*
DERRICK, H. B.,	Takoma Park,	*District of Columbia.*
DONNET, J.,	Baltimore,	*Baltimore City.*
DONOVAN, C. G.,	Washington,	*District of Columbia.*
DUBEL, B.,	Baltimore,	*Baltimore City.*
FRISTOE, H. W.,	Baltimore,	*Baltimore City.*
FUCHS, C. H.,	Port Chester,	*New York.*
GEMENY, W. A.,	Bozman,	Talbot.
GILPIN, W. F.,	Lanham,	Prince George.
GRAY, W. D.,	Prince Frederick,	Calvert.
HASLUP, L. A.,	Annapolis Junction,	Howard.
HOWARD, D. J.,	Brookeville,	Montgomery.
KISHPAUGH, W. M.,	Harrisburg,	*Pennsylvania.*
KORFF, F. A.,	Baltimore,	*Baltimore City.*
LARSEN, C. L.,	Long Island,	*New York.*
NASH, P. M.,	Washington,	*District of Columbia.*
OBERLIN, L. D.,	Silver Spring,	Montgomery.
RUFF, S. W.,	Roslyn,	Baltimore.
SELLMAN, A. H.,	Washington,	*District of Columbia.*
SENART, B. F.,	Washington,	*District of Columbia.*
SHOEMAKER, H. R.,	Ashton,	Montgomery.

NAME.	POST OFFICE.	COUNTY.
SMITH, H.,	Arlington,	Baltimore.
STURGIS, G. M.,	Hyattsville,	Prince George.
TARBUTTON, C. C.,	Crumpton,	Queen Anne.
THOMSEN, F. L.,	Hyattsville,	Prince George.
WATSON, R. D.,	Welcome,	Charles.
WILLIAMS, A. V.,	Nanticoke,	Wicomico.
WINANT, H. B.,	Washington,	*District of Columbia.*

JUNIOR CLASS.

BACON, C. H.,	Silver Spring,	Montgomery.
BOONE, A. W.,	Philadelphia,	*Pennsylvania.*
BRIMER, F. C.,	Stockton,	Worcester.
CARROLL, W. H.,	Baltimore,	*Baltimore City.*
CHILDS, L. M.,	Highland,	Howard.
CLARK, P. E.,	La Plata,	Charles.
COPPAGE, H. S.,	Church Hill,	Queen Anne.
CUTLER, W. V.,	Washington,	*District of Columbia.*
DAVISON, B.,	Riverdale,	Prince George.
DAY, F. D.,	Boyds,	Montgomery.
ELLIOTT, C. S.,	Westover,	Somerset.
ENGLE, M. D.,	Forest Glen,	Montgomery.
EPPLEY, G. F.,	Washington,	*District of Columbia.*
EYRE, R. S.,	Highland,	Howard.
EZEKIEL, M. J. B.,	Hyattsville,	Prince George.
FUHRMANN, C. J.,	Brentwood,	Prince George.
GILMOUR, L. J.,	Ogdensburg,	*New York.*
GRIGG, W. K.,	Port Chester,	*New York.*
HAIG, F. M.,	Riverdale,	Prince George.
HORN, P. V.,	Mt. Airy,	Carroll.
JONES, J. P.,	Davidsonville,	Anne Arundel.
KANN, R. S.,	Pittsburg,	*Pennsylvania.*
LONDON, O.,	New York,	*New York City.*
MCKINLEY, E. B.,	Washington,	*District of Columbia.*
MERRILL, G. M.,	Crisfield,	Somerset.
POSEY, W. B.,	Washington,	*District of Columbia.*
PYLE, M. A.,	Baltimore,	*Baltimore City.*
RAKEMANN, F. B.,	Washington,	*District of Columbia.*
REMSBURG, J. H.,	Middletown,	Frederick.
RICH, M. N.,	Washington,	*District of Columbia.*
SANDO, W. J.,	Washington,	*District of Columbia.*
SIMPSON, E. O.,	Chance,	Somerset.
STUNTZ, R. G.,	Washington,	*District of Columbia.*
TERNENT, S. S.,	Lonaconing,	Allegany.
THORNE, M. A.,	College Park,	Prince George.
WILDE, E. L.,	Washington,	*District of Columbia.*
WILLIAMS, W. P.,	Doncaster,	Charles.

NAME.	POST OFFICE.	COUNTY.
	SOPHOMORE CLASS.	
AITCHESON, J. L.,	Burtonsville,	Montgomery.
AMIGO, J.,	Havana,	*Cuba.*
AXT, R. W.,	Baltimore,	*Baltimore City.*
BABCOCK, K. W.,	Hagerstown,	Washington.
BERLIN, H. S.,	Baltimore,	*Baltimore City.*
BLETSCH, C. F.,	Riverdale,	Prince George.
BROOKS, A. J.,	Port Chester,	*New York.*
BROWN, M. C.,	Sparrows Point,	Baltimore.
BUELL, A. C.,	Washington,	*District of Columbia.*
BURNSIDE, B. L.,	Hyattsville,	Prince George.
CHEN, C. C.,	Shanghai,	*China.*
CHICHESTER, F. S.,	Aquasco,	Prince George.
CHICHESTER, P. W.,	Aquasco,	Prince George.
CHIPMAN, J.,	Baltimore,	*Baltimore City.*
CLARK, G. S.,	Ellicott City,	Howard.
CLARK, J. B.,	Ellicott City,	Howard.
CLENDANIEL, G. W.,	Kennedyville,	Kent.
CONOVER, G. I.,	Port Chester,	*New York.*
CONYNGTON, J.	Berwyn,	Prince George.
COSTER, H. O.,	Coster,	Calvert.
CRUM, P. E.,	Harmony Grove,	Frederick.
DAWSON, F. A.,	Washington,	*District of Columbia.*
DOWNIN, T. V.,	Williamsport,	Washington.
DUVALL, W. H., JR.,	Croome,	Prince George.
GLEASON, R. W.,	Washington,	*District of Columbia.*
GUTBERLET, I. W.,	Baltimore,	*Baltimore City.*
HAIG, R. V.,	Riverdale,	Prince George.
HAND, E. W.,	Berwyn,	Prince George.
HARDISTY, W. R.,	Seabrook,	Prince George.
HICKS, W. P.,	Govans,	*Baltimore City.*
HIPPLE, B. G.,	Marietta,	*Pennsylvania.*
JOHNSON, C. E.,	Brooklyn,	*New York.*
LEWIS, R. R.,	Frederick,	Frederick.
MCLEAN, D. L., JR.,	Baltimore,	*Baltimore City.*
MEASDAY, W., Jr.,	Brooklyn,	*New York.*
MILLER, E. V.,	Hagerstown,	Washington.
MORNHINWEG, W. F., Jr.,	Port Chester,	*New York.*
MURRELL, A. A.,	Baltimore,	*Baltimore City.*
NORRIS, G. W.,	College Park,	Prince George.
PAINE, C. E.,	Washington,	*District of Columbia.*
PECK, V. S.,	Washington,	*District of Columbia.*
PERKINS, H. T.,	Springfield,	Prince George.
POSEY, K. C.,	La Plata,	Charles.
PRATT, A. N.,	Hackensack,	*New Jersey.*
RICHMOND, J. M.,	Baltimore,	*Baltimore City.*
ROCKLIN, H. L.,	Baltimore,	*Baltimore City.*
RUST, A. D.,	Lanham,	Prince George.
SAWYER, E. M.,	Manila,	*Philippine Islands.*
SELLMAN, R. L.,	Beltsville,	Prince George.
SEWELL, M. D.,	Hyattsville,	Prince George.
SHUMATE, J. O.,	Washington,	*District of Columbia.*
SIEGERT, L. L., Jr.,	Galloways,	Anne Arundel.
SMITH, C. R.,	Baltimore,	*Baltimore City.*

NAME.	POST OFFICE.	COUNTY.
SMITH, J. E.,	Galloways,	Anne Arundel.
SPEIDEL, F. C.,	Washington,	*District of Columbia.*
STARR, J. H.,	Westover,	Somerset.
WALLOP, J. D., JR.,	Princess Anne,	Somerset.
	FRESHMAN CLASS.	
ABBOTT, C. W.,	Baltimore,	*Baltimore City.*
ADY, E. B.,	Sharon,	Harford.
ATKINSON, W. F.,	Washington,	*District of Columbia.*
AUSTIN, J. A.,	Blackshear,	*Georgia.*
BARTON, J. H.,	Centreville,	Queen Anne.
BAURMAN, W.,	Washington,	*District of Columbia.*
BENSON, H. J.,	Lanham,	Prince George.
BERRY, J. B.,	Rockville,	Montgomery.
BISSEL, T. L.,	Westover,	Somerset.
BODLEY, H. W.,	Oak Hill,	*Virginia.*
BRADLEY, J. C.,	Somerville,	*Massachusetts.*
BREWER, B.,	Washington,	*District of Columbia.*
CARROLL, H. M.,	Baltimore,	*Baltimore City.*
CARTER, C. C.,	Rock Island,	*Illinois.*
COMPTON, R. K., Jr.,	Baltimore,	*Baltimore City.*
CONEY, W. B., Jr.,	Baltimore,	*Baltimore City.*
CRONE, S. D.,	Frederick,	Frederick.
DAWSON, E. E.,	Trappe,	Talbot.
DIGGS, A. C.,	Baltimore,	*Baltimore City.*
DINGMAN, J. E.,	Berwyn,	Prince George.
DRAWBAUGH, J. R.,	Washington,	*District of Columbia.*
DUNNING, E. C.,	Govans,	*Baltimore City.*
ETIENNE, A. D.,	Berwyn,	Prince George.
ETTEN, A.,	Washington,	*District of Columbia.*
EZEKIEL, W. N.,	Hyattsville,	Prince George.
FELLERS, G. R.,	Brunswick,	Frederick.
FLETCHER, A. E.,	Erie,	*Pennsylvania.*
FORD, S. W.,	Upper Fairmount,	Somerset.
GADD, A. S.,	Centreville,	Queen Anne.
GONZALES, J.,	Bulacan,	*Philippine Islands.*
GOODWIN, L. M.,	Brier Hill,	*New York.*
GRAY, J. A.,	Brownsville,	Washington.
GREEN, H. T.,	New York City,	*New York.*
HAMILL, F. J.,	Baltimore,	*Baltimore City.*
HARTSHORN, V. H.,	Washington,	*District of Columbia.*
HEMPSTONE, W. D., JR.,	Leesburg,	*Virginia.*
HOCKMAN, G. B.,	Hagerstown,	Washington.
HODGINS, G. B.,	Union City,	*Pennsylvania.*
HOOK, ELIZABETH G.,	Baltimore,	*Baltimore City.*
INTO, A. H.,	Bristol,	*Rhode Island.*
JONES, A. S.,	Washington,	*District of Columbia.*
KEEFAUVER, J. E.,	Berwyn,	Prince George.
KEILY, M. J.,	Glens Falls,	*New York.*
KIRBY, W. W.,	Washington,	*District of Columbia.*
KNODE, J. S.,	Martinsburg,	*West Virginia.*
KNODE, R. T.,	Martinsburg,	*West Virginia.*
LAMBDIN, F. F.,	Annapolis,	Anne Arundel.
LANGRALL, J. H.,	Baltimore,	*Baltimore City.*
LAWSON, E. W.,	Crisfield,	Somerset.

NAME.	POST OFFICE.	COUNTY.
McBrien, R. O.,	Riverdale,	Prince George.
McCall, H. F.,	Hyattsville,	Prince George.
MacDonald, A.,	Washington,	*District of Columbia.*
Matthews, W. B.,	La Plata,	Charles.
Michael, R. B.,	Hammond,	*West Virginia.*
Morgan, J. A.,	Lonaconing,	Allegany.
Mornhinweg, E. S.,	Port Chester,	*New York.*
Poole, M. E.,	Mt. Airy,	Carroll.
Reading, J. G.,	Rockville,	Montgomery.
Riggs, M. T.,	Rockville,	Montgomery.
Ruppert, E. C. E.,	Washington,	*District of Columbia.*
Stager, A. F.,	Nutley,	*New Jersey.*
Steele, G. F.,	Duncannon,	*Pennsylvania.*
Sterling, W. F.,	Crisfield,	Somerset.
Sturgis, H. L.,	Hyattsville,	Prince George.
Tarbutton, E. A.,	Crumpton,	Queen Anne.
Taylor, E. G.,	Wisharts,	*Virginia.*
Ward, J. M.,	Jarrettsville,	Harford.
Wilson, J. M.,	Baltimore,	*Baltimore City.*

SUB-FRESHMAN CLASS.

Blumberg, M. D.,	New York City,	*New York.*
Bowling, E. N.,	Upper Marlboro,	Prince George.
Brundage, W. R.,	Port Chester,	*New York.*
Cockey, T. B., Jr.,	Pikesville,	Baltimore.
Clagett, J. H., Jr.,	Roslyn,	Baltimore.
Davis, R. D.,	Washington,	*District of Columbia.*
Frere, F. J.,	Tompkinsville,	Charles.
Grimm, W. H.,	Stanley,	*Virginia.*
Higgins, E. W.,	Mardela Springs,	Wicomico.
Horre, M. J.,	Elizabeth,	*New Jersey.*
Houston, T. T.,	Washington,	*District of Columbia.*
Johnson, C. M., Jr.,	Baltimore,	*Baltimore City.*
Loomis, F. D.,	Brentwood,	Prince George.
Peddicord, H. R.,	Dickerson,	Montgomery.
Prentice, L. T.,	Washington,	*District of Columbia.*
Reilly, W. J. R.,	Washington,	*District of Columbia.*
Roberts, F.,	Hyattsville,	Prince George.
Rockwell, H. P.,	Collington,	Prince George.
Spangler, G. W.,	Chamete,	*Kansas.*
Stephenson, P. R.,	St. Louis,	*Missouri.*
Stonestreet, N. V.,	Rock Point,	Charles.
Wagner, J. C.,	Port Chester,	*New York.*

SECOND YEAR AGRICULTURAL.

Becker, J. F.,	Washington,	*District of Columbia.*
Bible, H. F.,	College Park,	Prince George.
Frazee, W. L.,	Old Town,	Allegany.
McCormick, J. M.,	Bel Air,	Harford.
Pywell, E. E.,	College Park,	Prince George.
Stevens, J. W.,	Baltimore,	*Baltimore City.*
Trail, O.,	Easton,	Talbot.
Wasney, J. S., Jr.,	Washington,	*District of Columbia.*
Waybright, E. J.,	Littlestown,	*Pennsylvania.*

NAME.	POST OFFICE.	COUNTY.
SECOND YEAR HORTICULTURAL.		
BARRETT, A. J.,	Rome,	*Italy.*
BEALL, O. L.,	Beltsville,	Prince George.
BOYD, A. J.,	Washington,	*District of Columbia.*
HOLLIDAY, K. B.,	Norfolk,	*Virginia.*
SWARTZ, J. M.,	Baltimore,	*Baltimore City.*
FIRST YEAR AGRICULTURAL.		
BOYER, R.,	Washington,	*District of Columbia.*
BREADY, G. A.,	Herndon,	*Virginia.*
CAUFFMAN, L. E.,	Merchantville,	*New Jersey.*
CRILLY, J., JR.,	Washington,	*District of Columbia.*
FORREST, R.,	Rockville,	Montgomery.
HALL, F. B.,	Charleston,	*West Virginia.*
HOLLAND, J. C.,	Derwood,	Montgomery.
JOHNSON, J. G.,	Baltimore,	*Baltimore City.*
KRETSCHMAN, G. W.,	Elmira,	*New York.*
MALONE, W. L.,	Washington,	*District of Columbia.*
MCCENEY, R. S.,	Silver Spring,	Montgomery.
MCCENEY, W. H.,	Silver Spring,	Montgomery.
MCCORKLE, A.,	Charleston,	*West Virginia.*
RAYBAUD, E., JR.,	Washington,	*District of Columbia.*
REITER, C. L.,	Relay,	Baltimore.
SCHULTE, H. H., JR.,	Newark,	*New Jersey.*
SCRIBNER, A. M.,	Philadelphia,	*Pennsylvania.*
STUBBS, J. S.,	Charleston,	*West Virginia.*
VAUX, CHARLOTTE A.,	Washington,	*District of Columbia.*
WEAVER, H.,	Greensboro,	Caroline.
WILLISON, H. V.,	Cumberland,	Allegany.
WILMER, H. R.,	Faulkner,	Charles.
UNCLASSIFIED.		
ARTHUR, R. W.,	Havre de Grace,	Harford.
COLE, K. C.,	Port Chester,	*New York.*
DONOVAN, T. J.,	Beverly Farms,	*Massachusetts.*
NEVIN, D. B.,	Easton,	*Pennsylvania.*
PERRIE, A. L.,	College Park,	Prince George.
SADTLER, D. T.,	Baltimore,	*Baltimore City.*
WALLS, H. R.,	Church Hill,	Queen Anne.
STUDENTS IN THE SUMMER SCHOOL.		
ABELL, EMERALD,	Beachville,	St. Mary.
BADEN, RUTH,	Baden,	Prince George.
BAST, WILLIAM P.,	Boonsboro,	Washington.
BEALL, GRACE E.,	Silver Spring,	Montgomery.
BENNETT, RUTH H.,	Washington,	*District of Columbia.*
BLANDFORD, ALMA,	Brandywine,	Prince George.
BLUNDON, MARIE,	Riverdale,	Prince George.
BOOTH, MAUD L.,	Hancock,	Washington.
BOUNDS, MYRTLE,	Laurel,	Prince George.

NAME.	POST OFFICE.	COUNTY.
Bowdoin, Audrey,	College Park,	Prince George.
Bowie, Jane R.,	La Plata,	Charles.
Brannock, Willie,	Church Creek,	Dorchester.
Brashear, Corinne,	Mt. Airy,	Carroll.
Bromley, Grace M.,	Washington,	*District of Columbia.*
Brookbank, Annie V.,	Riceville,	Charles.
Brown, C. Howard,	Bladensburg,	Prince George.
Burgess, Irma S.,	Clinton,	Prince George.
Burner, Florence H.,	Baltimore,	*Baltimore City.*
Buxton, Grace M.,	Gaithersburg,	Montgomery.
Carr, Margaret J. S.,	Baden,	Prince George.
Cator, Nadine,	Taylors Island,	Dorchester.
Chen, C. C.,	College Park,	Prince George.
Chesley, Emilie,	Charlotte Hall,	St. Mary.
Chichester, Mary,	Aquasco,	Prince George.
Clark, Naomi E.,	Washington,	*District of Columbia.*
Collins, Sue,	Germantown,	Montgomery.
Cooksey, Amy L.,	Dentsville,	Charles.
Cooper, Mrs. Emma K.,	Washington,	*District of Columbia.*
Creighton, Sue E.,	East New Market,	Dorchester.
Croft, Mary,	Cross Roads,	Charles.
Croft, Myra C.,	Port Tobacco,	Charles.
Dail, Jessie,	Salem,	Dorchester.
Dashiell, M. Mae,	Laurel,	Prince George.
Day, Roger X.,	Tuscarora,	Frederick.
De Corse, Emma E.,	Mechanicsville,	St. Mary.
Dent, Louise,	Oakley,	St. Mary.
Dent, Myrtle,	Valley Lee,	St. Mary.
Dent, Nellie,	Oakley,	St. Mary.
Donaldson, Edna,	Smithsburg,	Washington.
Donaldson, Pearl,	Gambrills,	Anne Arundel.
Dove, Edna F.,	Forestville,	Prince George.
Duff, Mrs. Corinne D.,	Germantown,	Montgomery.
Dunnock, Lucille,	Woolford,	Dorchester.
Duval, Lydia Lee,	Annapolis,	Prince George.
Duvall, Margaret,	Croom,	Prince George.
Elder, Helen,	College Park,	Prince George.
Etchison, M. Landella,	Gaithersburg,	Montgomery.
Foxwell, Erva Ruth,	Leonardtown,	St. Mary.
France, R. D.,	College Park,	Prince George.
Freeman, Mary J.,	Du Bois,	Charles.
Frere, Marie,	Tompkinsville,	Charles.
Frizzell, Agnes,	Gaithersburg,	Montgomery.
Frizzell, Laura,	Gaithersburg,	Montgomery.
Gallahan, Julia,	Brandywine,	Prince George.
Gardner, Mrs. Genevieve,	White Plains,	Charles.
Garst, Catherine,	Washington,	*District of Columbia.*
Gonzales, Jose M.,	College Park,	Prince George.
Gott, Mariel V.,	Boyds,	Montgomery.
Greenwell, Helen,	Hollywood,	St. Mary.
Griffith, Julian,	Gaithersburg,	Montgomery.
Griffith, Mary,	Friendship,	Anne Arundel.
Grove, Ethel Annie,	Big Spring,	Washington.
Gulette, Mary,	Vienna,	Dorchester.

NAME.	POST OFFICE.	COUNTY.
GUYTHER, CLAUDIA V.,	Piney Point,	St. Mary.
HAISLIP, LOUISE,	Nanjemoy,	Charles.
HALL, ANNIE L.,	Glendale,	Prince George.
HAMILTON, LOUISE,	Mitchelville,	Prince George.
HAND, ETHEL,	Berwyn,	Prince George.
HARDESTY, MATTIE V.,	Chaneyville,	Calvert.
HARDESTY, NETTIE E.,	Seabrook,	Prince George.
HAYDEN, PAULINE,	Hollywood,	St. Mary.
HIGGINS, DAISY C.,	Gaithersburg,	Montgomery.
HILLEGEIST, W. M.,	College Park,	Prince George.
HOLLINGSWORTH, EVALINE,	Smithsburg,	Washington.
HOLMES, GRACE,	Takoma Park,	*District of Columbia.*
HORSEMAN, DELIA,	Aireys,	Dorchester.
HUBSCHER, THERESA L.,	Berwyn,	Prince George.
HUEMMER, MARY,	East New Market,	Dorchester.
HUGHES, MRS. HELEN C.,	Hughesville,	Charles.
HUTZELL, JOSEPHINE,	Boonsboro,	Washington.
HUNTER, HELEN,	Annapolis,	Anne Arundel.
ISENBERG, MAUDE R.,	East New Market,	Dorchester.
JACOBS, IVA M.,	Odenton,	Anne Arundel.
JAMESON, M. LOUISE,	Popes Creek,	Charles.
JARBOE, MAUDE E.,	Leonardtown,	St. Mary.
JARBOE, MAUDE M.,	Mechanicsville,	St. Mary.
JOHNSON, C. M., JR.,	Baltimore,	*Baltimore City.*
JOHNSON, EVELIN,	Cambridge,	Dorchester.
JOHNSON, J. G.,	Baltimore,	*Baltimore City.*
JONES, EDYTHE M.,	Davidsonville,	Anne Arundel.
JONES, ISABEL B.,	Brighton,	Montgomery.
JONES, JOHN PAUL,	Davidsonville,	Anne Arundel.
JUSTICE, DOROTHY M.,	College Park,	Prince George.
JUSTICE, NORRENE,	College Park,	Prince George.
KING, ELIZABETH,	Davidsonville,	Anne Arundel.
KING, MABEL,	Burdette,	Montgomery.
KING, MAYE,	Germantown,	Montgomery.
KIRWAN, SOPHIE,	Lloyds,	Dorchester.
LIVINGSTON, C. C.,	Manchester,	Carroll.
LENNAN, B. S.,	Washington,	*District of Columbia.*
LEWIS, LILLIAN,	Berwyn,	Prince George.
LONG, SARA,	Carmichaels,	*Pennsylvania.*
LOVE, ANNA MAY,	Morganza,	St. Mary.
LUHN, HARRIET E.,	Washington,	*District of Columbia.*
LYONS, GRACE,	Tippetts,	Prince George.
LYONS, MARY,	Tippetts,	Prince George.
MCALLISTER, GEORGIA,	Vienna,	Dorchester.
MCALLISTER, MAUDE,	Vienna,	Dorchester.
MCATEE, EVELYN W.,	Germantown,	Montgomery.
MCBRIEN, R. O.,	Riverdale,	Prince George.
MCBRIEN, RUTH,	Riverdale,	Prince George.
MCGARRY, WINIFRED,	Washington,	*District of Columbia.*
MCLUCAS, CHARLES E.,	Big Pool,	Washington.
MARSHALL, EDNA M.,	Easton,	Talbot.
MATACOTTA, MARY,	Baltimore,	*Baltimore City.*
MATTHAEI, DOROTHEA,	Cumberland,	Allegany.
MATTINGLY, LELIA,	Leonardtown,	St. Mary.
MEADE, ELSIE,	Arnolds,	Anne Arundel.

NAME.	POST OFFICE.	COUNTY.
MILBURN, ROSA I.,	Maddox,	St. Mary.
MILLS, SADIE E.,	Vienna,	Dorchester.
MONTGOMERY, SUSIE G.,	La Plata,	Charles.
MUDD, PHYLLIS,	Malcolm,	Charles.
MUNSON, L. MARIE,	Hancock,	Washington.
MURPHY, DELLA,	Vienna,	Dorchester.
MURRAY, EFFIE L.,	Brandywine,	Prince George.
MURRAY, MARY M.,	Smithsburg,	Washington.
NEILD, EVELYN W.,	Woolford,	Dorchester.
NORRIS, GEORGE W.,	Baltimore,	*Baltimore City.*
OWENS, FLORENCE E.,	Pindell,	Anne Arundel.
OWEN, JENNIE A.,	La Plata,	Charles.
PAINE, C. E.,	Washington,	*District of Columbia.*
PATTERSON, W. C.,	College Park,	Prince George.
PENDLETON, AGNES L.,	Washington,	*District of Columbia.*
PERKINS, SUE,	Springfield,	Prince George.
POWELL, MILDRED M.,	Brookeville,	Montgomery.
PICKRON, MAUDE,	Hurlock,	Dorchester.
PLOWDEN, NELL M.,	Bushwood,	St. Mary.
PROUT, LINA,	Friendship,	Anne Arundel.
PUMPHREY, ESTHER,	Germantown,	Montgomery.
PYLES, RUTH B.,	Clinton,	Prince George.
RAWLINGS, B. PAUL,	Hyattsville,	Prince George.
RAYBAUD, EDUARDO, JR.,	Washington,	*District of Columbia.*
RICHMOND, GLADYS,	Hyattsville,	Prince George.
RITZ, LOUISE,	Hancock,	Washington.
RITZ, MILDRED,	Hancock,	Washington.
ROGERS, MARY,	Hyattsville,	Prince George.
ROME, HYMAN P.,	Bladensburg,	Prince George.
SASSCER, T. EVALINA,	North Keys,	Prince George.
SCAGGS, EDNA K.,	Branchville,	Prince George.
SCALA, NORMAN,	Washington,	*District of Columbia.*
SELLERS, MARGARET,	Vienna,	Dorchester.
SHEA, KATHERINE,	Washington,	*District of Columbia.*
SHEA, MABEL,	Washington,	*District of Columbia.*
SHORT, MYRTLE R.,	Vienna,	Dorchester.
SHOWELL, MARGARET,	Berlin,	Worcester.
SHREVE, EFFIE H.,	Dickerson,	Montgomery.
SIBLEY, IRENE,	Germantown,	Montgomery.
SLACUM, ZENIA,	Taylors Island,	Dorchester.
SLOAN, MARGUERITE,	Lanham,	Prince George.
SMITH, BERNADETTE H.,	Hancock,	Washington.
SMITH, H. L.,	Riverdale,	Prince George.
SMITH, RUTH,	Smithsburg,	Washington.
SPEDDEN, NELLIA A.,	James,	Dorchester.
SPENCE, CHARLOTTE C.,	College Park,	Prince George.
STABLER, S. S.,	Frederick,	Frederick.
STAPLEFORTE, MARY L.,	Madison,	Dorchester.
STEVENSON, PHILIP R.,	Hollands Island,	Dorchester.
STEYNEN, DORA B.,	Laurel,	Prince George.
STONER, EVA,	Smithsburg,	Washington.
TIGHE, EVA,	Laurel,	Prince George.
TOWNSEND, GRACE,	Brookeville,	Montgomery.
TRAVERS, R. ELIZABETH,	Taylors Island,	Dorchester.
TUBMAN, ETHEL,	Golden Hill,	Dorchester.

NAME.	POST OFFICE.	COUNTY.
TUBMAN, MARIE,	Golden Hill,	Dorchester.
VANN, MRS. ANNIE S.,	Alabama City,	*Alabama.*
VEITCH, CAROLINE,	College Park,	Prince George.
VEITCH, ISABEL,	College Park,	Prince George.
VINCENT, FLORENCE E.,	Airey,	Dorchester.
WARD, WILSON S.,	Rockville,	Montgomery.
WASHINGTON, ELEANOR,	Brookland,	*District of Columbia.*
WATERS, VIRGINIA,	Gaithersburg,	Montgomery.
WATHEN, LOUISE,	Leonardtown,	St. Mary.
WATSON, DOROTHY,	Malcolm,	Charles.
WHEATLEY, NELLIE,	East New Market,	Dorchester.
WHEELER, MAUD,	Hurry,	St. Mary.
WILLEY, HAZEL,	Vienna,	Dorchester.
WILSON, MARGARET,	Baden,	Prince George.
ZIMMERMAN, GLADYS,	Big Pool.	Washington.

STUDENTS IN SHORT WINTER COURSES.

ADAMS, HERBERT,	Brighton,	Montgomery.
ANDREW, D. W.,	Baltimore,	*Baltimore City.*
ARNOLD, CLAUDE E.,	Annapolis Junction,	Anne Arundel.
ARNOLD, MRS. CLAUDE E.,	Annapolis Junction,	Anne Arundel.
BAY, JOHN W.,	Whiteford,	Harford.
BEALL, MRS. S. W.,	Beltsville,	Prince George.
BIRD, RHODA IRENE,	Harrisburg,	*Pennsylvania.*
BOWDOIN, AUDREY H.,	College Park,	Prince George.
BOWDOIN, LINA M.,	College Park,	Prince George.
BRELSFORD, MRS. J. C.,	Berwyn,	Prince George.
BRINKLEY, RUTH W.,	College Park,	Prince George.
BROUGHTON, MRS. L. B.,	College Park,	Prince George.
BYRN, MRS. S. L.,	Cambridge,	Dorchester.
CASTELLA, MRS. C. E.,	Riverdale,	Prince George.
CASTELLA, MRS. WM.,	Riverdale,	Prince George.
CHADWICK, MRS. W.,	Washington,	*District of Columbia.*
CLAFLIN, MRS. ELOISE P.,	College Park,	Prince George.
CLARK, DELLA L.,	Washington,	*District of Columbia.*
CRESMER, J. E.,	Hyattsville,	Prince George.
CRESMER, MRS. J. E.,	Hyattsville,	Prince George.
COALE, DENNIS S.,	Aberdeen,	Harford.
COALE, MRS. S. P.,	Takoma Park,	*District of Columbia.*
COALE, W. CHASE,	Aberdeen,	Harford.
COLTON, MRS. T. H.,	Washington,	*District of Columbia.*
CONRAD, M. I.,	Baltimore,	*Baltimore City.*
CRISP, DOROTHY E.,	Washington,	*District of Columbia.*
DAY, GRACE, L.,	Rocks,	Harford.
DEMAREE, MRS. L. C.,	Glendale,	Prince George.
DEVILBISS, GEORGE,	New Windsor,	Carroll.
DIXON, W. T.,	Washington,	*District of Columbia.*
DIXON, MRS. WILLIAM T.,	Washington,	*District of Columbia.*
DURNBAUGH, MRS. W. K.,	College Park,	Prince George.
EDWARDS, MRS. CHAS. S.,	College Park,	Prince George.
EVANS, MRS. M. W.,	North Ridgeville,	*Ohio.*
EZEKIEL, JACOB L.,	Hyattsville,	Prince George.
FARLEY, HANSON,	Princess Anne,	Somerset.
FEALY, M. S.,	Washington,	*District of Columbia.*

NAME.	POST OFFICE.	COUNTY.
FRIESE, E.,	Catonsville,	Baltimore.
GALBLUM, SAMUEL,	Washington,	*District of Columbia.*
GALBREATH, ELIZABETH S.,	Street,	Harford.
GALBREATH, ROSE E.,	Delta,	*Pennsylvania.*
GASS, S. J.,	Washington,	*District of Columbia.*
GILLIS, MYRTLE,	Rockville,	Montgomery.
GRABILL, L. R.,	Washington,	*District of Columbia.*
GREEN, S. A.,	Towson,	Baltimore.
GROH, EDISON,	Hagerstown,	Washington.
HARDELL, LELIA,	Washington,	*District of Columbia.*
HEANEY, GEO. A., JR.,	Washington,	*District of Columbia.*
HEINTZEMAN, C. H., SR.,	Baltimore,	*Baltimore City.*
HEINTZEMAN, C. H., JR.,	Baltimore,	*Baltimore City.*
HOLLOWAY, J. Q. A.,	Baltimore,	*Baltimore City.*
HOLMES, MRS. F. S.,	College Park,	Prince George.
HOOK, W. H.,	Towson,	Baltimore.
HUBBARD, MRS. E. S.,	Beltsville,	Prince George.
JAMES, W. B.,	Hancock,	Washington.
JANNEY, C. HOMER,	Lutherville,	Baltimore.
JARRELL, MRS. T. D.,	College Park,	Prince George.
JONES, C. W.	Washington,	*District of Columbia.*
JONES, GEORGE M.,	Oxon Hill,	Prince George.
JONES, L. E.,	Muirkirk,	Prince George.
JUST, RICHARD P.,	Baltimore,	*Baltimore City.*
JUSTICE, NORENE,	College Park,	Prince George.
KEEFAUVER, MRS. J. FRED,	Berwyn,	Prince George.
KEMP, MRS. W. B.,	College Park,	Prince George.
KISHPAUGH, MRS. WM. M.,	College Park,	Prince George.
KNOWLTON, MRS F. H.,	Laurel,	Prince George.
KNOWLTON, NELLIE,	Laurel,	Prince George.
KOCHER, MRS. F. T.,	College Park,	Prince George.
KRUG, HARRY,	Lineboro,	Carroll.
LABORES, DR. GREGORY,	Baltimore,	*Baltimore City.*
LATIMER, W. J.,	Anacostia,	*District of Columbia.*
LEPSON, MRS. F. P.,	College Park,	Prince George.
LEWIS, MARION M.,	Manassas,	*Virginia.*
LEYMAN, PAUL M.,	Berwyn,	Prince George.
LONGENECKER, X.,	Ridgely,	Caroline.
LYNHAM, W. B.,	Berwyn,	Prince George.
MCBATH, MRS. E. B.,	Riverdale,	Prince George.
MACGREGOR, W. B.,	Hyattsville,	Prince George.
MACKALL, J. N.	Baltimore,	*Baltimore City.*
MAGRUDER, O. B.,	Washington,	*District of Columbia.*
MALLERY, RUTH,	College Park,	Prince George.
MEANY, C. FRANCIS,	Washington,	*District of Columbia.*
MILSTEAD, EDWIN H.,	Washington,	*District of Columbia.*
MILSTEAD, MRS. E. H.,	Washington,	*District of Columbia.*
MONTGOMERY, WM. W. E.,	Washington,	*District of Columbia.*
MOORE, A. M.,	Congress Heights,	*District of Columbia.*
MOORE, GEORGE,	White Marsh,	Baltimore.
MOORE, LAURENCE,	Fullerton,	Baltimore.
MOORE, LIDA,	Washington,	*District of Columbia.*
MOORE, L. M.,	Congress Heights,	*District of Columbia.*
MOORE, NEITA C.,	Congress Heights,	*District of Columbia.*

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SUMMARY OF STUDNTS.

Graduate	17
Senior	31
Junior	37
Sophomore	57
Freshman	68
Sub-Freshman	22
Second Year Agricultural	9
Second Year Horticultural	5
First Year Agricultural and Horticultural	22
Unclassified	7
Summer School	188
Short Winter Courses	138
	601
Counted twice	10
Total	591

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Of The

Maryland State College

Vol. 15 JUNE 1, 1918 No. 1

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1918 1919

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THE MARYLAND STATE COLLEGE OF AGRICULTURE

CATALOGUE

1918—1919

Containing general information concerning the College, Announcements for the Scholastic Year 1918-1919, and Records of 1917-1918.

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CALENDAR

FIRST TERM.

Monday, September 30, and Tuesday, October 1.—Registration and Organization.
Wednesday, October 2, 1 P. M.—College Work Begins.
Thursday, November 30.—Thanksgiving Recess.
Friday, December 20, 12 M.—First Term Ends.
Friday, December 20, 12 M., to Monday, January 6, 8 A. M.—Christmas Recess.

SECOND TERM.

Monday, January 6, 8 A. M.—Second Term Begins.
Monday, January 6.—Special Winter Courses Begin.
Saturday, March 15.—Second Term and Special Winter Courses End.

THIRD TERM.

Monday, March 17.—Third Term Begins.
Friday, April 18.—Good Friday Recess.
Thursday, May 15.—Submitting of Theses.
Sunday, May 25.—Baccalaureate Sermon.
Friday, May 30.—Founders' and Farmers' Day; Graduation Day.

1918

JULY

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1919

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Harford.....T. E. McLAUGHLIN, B. S., Bel Air.
Howard.....J. L. FIDLER, B. S. A., Ellicott City.
Kent.....L. L. BURRELL, B. S., Chestertown.
Montgomery.....F. J. VAN HOESEN, Rockville.
Prince George's.....C. H. TAYLOR, B. S., Upper Marlboro.
Queen Anne's.....O. C. JONES, B. S. A., Centreville.
Somerset.....C. Z. KELLER, B. S. H., Princess Anne.
St. Mary's.....G. F. WATHEN, Jr., Loveville.
Talbot.....E. P. WALLS, B. S., Easton.
Washington.....THOS. L. SMITH, B. S., Hagerstown.
Wicomico.....GEORGE R. COBB., B. S., Salisbury.
Worcester.....E. I. OSWALD, B. S. H., Snow Hill.

Prince George's.....J. F. ARMSTRONG (col.), Seat Pleasant.
Somerset.....J. W. B. TULL (col.), Princess Anne.
Somerset.....L. H. MARTIN (col.), Princess Anne.

COUNTY HOME DEMONSTRATION AGENTS.

Allegany.....(Mrs.) LEONA H. POWELL, Cumberland.
Anne Arundel.....
Baltimore.....
Calvert.....(Miss) RUBY F. CHAMBERLAIN, Prince Frederick.
Caroline.....(Mrs.) EDITH G. NORMAN, Denton.
Carroll.....(Miss) RACHEL EVERETT, Westminster.
Cecil.....
Charles.....(Miss) VIOLA POOLE, La Plata.
Dorchester.....(Miss) HELEN G. WALKER, Cambridge.
Frederick.....(Miss) ESTHER R. NELSON, Frederick.
Garrett.....(Miss) FRANCES E. GERBER, B. S., Oakland.
Harford.....(Miss) MARGARET SCHMIDT, B. S., Bel Air.
Howard.....(Mrs.) NELL C. LAWSON. Ellicott City.
Kent.....(Miss) ANNIE L. COPPER, Chestertown.
Montgomery.....(Miss) HELEN ERICKSON, Rockville.
Prince George's.....
Queen Anne's.....(Miss) LUCY E. ALLEN, B. S., Centreville.
St. Mary's.....(Miss) M. LILLIAN MATTINGLY, Bushwood.
Somerset.....
Talbot.....(Mrs.) OLIVE K. WALLS, Easton.
Washington.....(Miss) ALICE S. JONES, B. S., Hagerstown.
Wicomico.....(Miss) GOLDIE S. COOK, Salisbury.
Worcester.....(Miss) LUCY J. WALTER, Snow Hill.

URBAN WORKERS.

Allegany County.....(Miss) ANNA P. WARREN, Cumberland.
Baltimore City.....(Miss) GLADYS J. WARD, 518 N. Charles St.
Baltimore City.....(Miss) ALICE C. WALTON, 518 N. Charles St.
Baltimore City.....(Mrs.) FLORENCE B. BENNETT, 2305 Whittier Ave.
Baltimore City.....(Mrs.) SARAH C. FERNANDIS (col.), 953 Druid Hill Ave.
Washington County.....(Miss) SUE W. FRICK, Hagerstown.

COLORED WORKERS.

Charles County.....(Miss) LEAH D. WOODSON, La Plata.
Eastern Shore.....(Miss) EDNA E. THOMAS, Princess Anne.
Montgomery County.....(Miss) MARIE E. MONTGOMERY, Bowie.
Prince George's County...(Miss) EULA L. WATKINS, Upper Marlboro.

FARMERS' INSTITUTES

Now co-ordinated with the Extension Service.

STATE FERTILIZER WORK

H. B. McDONNELL,
State Chemist.

C. G. REMSBERG,
Assistant Chemist.

L. H. VAN WORMER, M. S.,
Assistant Chemist.

E. R. HITCHNER, M. S.,
Assistant Chemist.

*_____
Assistant Chemist.

GRAYSON BAGGS,
Clerk.

J. S. WHITBY,
Inspector.

CHARLES T. DAY,
Inspector.

J. S. SCARBOROUGH,
Inspector.

*To be filled.

STATE HORTICULTURAL DEPARTMENT

THOMAS B. SYMONS, Director.

E. N. CORY.
State Entomologist.

C. E. TEMPLE,
State Pathologist.

C. B. NICKELS,
Assistant in Apiculture.

WM. C. TRAVERS,
Inspector.

LECTURERS, 1917-1918

Members of the College faculty, Experiment Station staff, and Extension Service st lectured during the short winter courses on Domestic Science, Soils, Crops, Farm Live Stock a Dairying, Poultry, Horticulture, Farm Mechanics, and Good Roads, in addition to the followi special lecturers:

JOHN H. DRURY, Chaney, Md.
PROF. C. P. CLOSE, U. S. Department of Agriculture.
DR. A. A. BRIGHAM, Brinklow, Md.
A. R. LEE, U. S. Department of Agriculture.
HARRY LAMON, U. S. Department of Agriculture.
J. A. GAMBLE, U. S. Department of Agriculture.
C. T. RICE, U. S. Department of Agriculture.
C. E. KOONTZ, Virginia.
DR. VALLIE HAWKINS, Farm Grove, Pa.
MRS. H. J. PATTERSON, College Park, Md.
MISS HANNAH WESLEYING, U. S. Department of Agriculture.
MISS GLADYS WARD, Baltimore, Md.
MR. McLAIN, U. S. Department of Agriculture.
MISS BENN, New York.

FACULTY COMMITTEES FOR 1918-1919

ALUMNI.

MESSRS. RUFFNER, CORY, BYRD, BROUGHTON and SCHULZ.

BUILDINGS AND GROUNDS.

MESSRS. CRISP, OLDENBURG, STODDARD, PATTERSON, PIERSON and SMITH.

CATALOGUE, STUDENT ENROLLMENT AND COLLEGE ENTRANCE.

MESSRS. ZIMMERMAN, SPENCE, COTTERMAN, CREESE, GWINNER and P. I. REED.

COURSES OF STUDY.

MESSRS. COTTERMAN, R. C. REED, McDONNELL, SPENCE, ZIMMERMAN, T. H. TALIAFERRO and EMERSON.

DORMITORIES AND STUDENT ORGANIZATIONS.

MESSRS. BYRD, BROUGHTON, SCHULZ, BOMBERGER and CLASS PRESIDENTS.

GRADUATE WORK.

THE PRESIDENT and MESSRS. COTTERMAN, T. H. TALIAFERRO, PATTERSON, R. C. REED, McDONNELL, APPLEMAN and ROSE.

LIBRARY.

MESSRS. W. T. L. TALIAFERRO, GWINNER, SPENCE, BROUGHTON, SCHULZ, MISS CONNER, NORTON, APPLEMAN, SYMONS and WENTZ.

PHYSICAL TRAINING.

MESSRS. BYRD, BOMBERGER, RICHARDSON, W. D. GROFF, '00; H. C. WHITFORD, '01; and two students.

PUBLIC FUNCTIONS.

MESSRS. T. H. TALIAFERRO, BOMBERGER, RICHARDSON, CORY, METZGER, W. T. L. TALIAFERRO and THE COMMANDANT.

SANITATION.

MESSRS. GRIFFITH, R. C. REED, McDONNELL, T. H. TALIAFERRO and PIERSON.

SCHEDULE.

MESSRS. GWINNER, BROUGHTON, WENTZ, SPENCE, SCHULZ, ROSE, GAMBLE and KRAMER.

SOCIAL ACTIVITIES.

MESSRS. CORY, RICHARDSON, CRISP, BECKENSTRATER and WENTZ.

STUDENT PUBLICATIONS.

MESSRS. P. I. REED, RICHARDSON, BYRD and JORDAN.

COLLEGE PUBLICATIONS.

MESSRS. PATTERSON, BYRD, JORDAN, McDONNELL, RICHARDSON and SYMONS.

GENERAL INFORMATION

History—The scientific study of agriculture was advocated by farseeing Maryland citizens as early as the second quarter of the nineteenth century. They were sensible of two facts—namely, that agriculture is one of the largest contributing factors to a nation's prosperity, and that all agricultural pursuits, in order to be potent, must be genuinely scientific. In 1847 the subject was first brought formally to the attention of the Legislature of the State. In 1856 a bill was passed which granted a charter for the establishment, endowment and incorporation of the Maryland Agricultural College. Under the provisions of this charter the corner-stone of the original college building was laid on August 24, 1858, and the institution was opened to the public on October 5, 1859. No funds were provided by the Act of 1856, but the actual establishment of the College was made possible by the contributions of public-spirited citizens of the commonwealth. The names of these persons, in remembrance of their generosity, are inscribed on the massive gateway to the College grounds. The College is unique in that its original charter was the first in which systematic agricultural experimentation was recognized as an important part of its activities. The institution thus created was the first significant agricultural college on the Atlantic slope and the second in the Western Hemisphere.

For three years the College was under private management. In 1862 the Congress of the United States, recognizing the practical value and increasing need of such colleges, passed the Land Grant Act. This act granted each State and Territory that should claim its benefits a proportionate amount of unclaimed Western lands, in place of scrip, the proceeds from the sale of which should apply under certain conditions to the "endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach

such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." This grant was accepted by the General Assembly of Maryland. The Maryland Agricultural College was named as the beneficiary of the grant. Thus the College became, at least in part, a State institution; in the fall of 1914 its control was taken over entirely by the State. In 1916 the General Assembly granted a new charter to the College and changed its name from The Maryland Agricultural College to The Maryland State College of Agriculture.

In 1847 an act had been passed making provision for a State laboratory in which the application of chemistry to agriculture was to be undertaken. In 1858, following the selection of a location for the College, experimentation was undertaken on the College farm. After two or three years this work was interrupted by the general financial distress of the time and by the Civil War. In 1888, under the provisions of the Hatch Act of the preceding year, the Agricultural Experiment Station was established as a department of the College.

Other major divisions of the College, together with the dates of their establishment, are as follows: State Department of Fertilizer, Feed and Agricultural Lime Control, 1894; State Department of Farmers' Institutes, 1896; State Horticultural Department, 1898; Extension Service, 1914, and Vocational Training, 1918. The State Bureau of Forestry co-operates with the College, the director being, by the terms of his appointment, Lecturer on Forestry.

The progress of the College, though not rapid, has been steady and in the main satisfactory. By virtue of the broad scope of its activities it is the most important factor in the agricultural and industrial development of the State.

Agricultural Experiment Station—This is a distinct department of the College and is primarily an institution of scientific research for the benefit of agriculture. It was called into existence as a result of the passage of the United States Hatch Act

in 1887. This act states the object and purpose of the Experiment Station as follows:

> That it shall be the object and duty of said Experiment Stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories.

Prior to the establishment of the Experiment Stations there was practically no agricultural science in this country. The work done by these institutions during the past quarter of a century has given the colleges a science of agriculture to teach, and laid a broad foundation for the future development of the agriculture of the country.

The placing of agricultural demonstrations and extension work on a national basis has been the direct outgrowth of the work of the Experiment Station.

The students of the College are kept in close touch by their professors with the investigations in progress. Also they receive special lectures and instruction by the persons in charge of investigations. Some students are employed by the station on the farm and in the laboratories. The station offers several research fellowships to students who desire to study for advanced degrees. These fellowships are open to graduates of other colleges as well as of this institution. They pay from $40 to $60 per month, depending upon the nature of the work and amount of time given to station work.

Extension Service—The Extension Service of the College, in co-operation with the United States Department of Agricul-

ture, performs the important function of carrying to the people of the State, through practical demonstrations conducted by specialists and county agents, the results of investigations in the fields of Agriculture and Home Economics. The organization consists of the administrative forces, including the director, assistant director, specialists and clerical force, on the one hand; and the field forces, including the county agricultural demonstration agents and the home demonstration agents in each county and in the chief cities of the State, on the other.

Each specialist is responsible for a certain project. The county agents and the specialists jointly carry on practical demonstrations under the several projects by inducing the farmers and home-makers to follow specific directions in the production of some certain crop, or in some phase of home-making, with the view of putting into practice on the farms of the State improved methods of Agriculture and Home Economics that have stood the test of investigation and experimentation. Movable schools, lasting sometimes many days, are held in the several counties. At such schools the specialists discuss phases of Agriculture and Home Economics in which the people of the respective counties are specially interested.

The work of the Boys' Agricultural Clubs is of especial importance from an educational point of view. The specialists in charge of these projects, in co-operation with the county agricultural agents, organize the boys of the several communities of the county into agricultural clubs for the purpose of teaching them by actual practice the principles underlying the growing of an acre of corn, an eighth acre of potatoes or the raising of a pig or a flock of poultry. The boys hold regular meetings for the discussion of problems connected with their several projects and for the comparison of experiences. Prizes are offered for the stimulation of interest in the work.

The Home Economics specialists and agents organize the girls into clubs for the purpose of instructing them in the principles underlying canning, drying, preserving of fruits and vegetables, cooking, dressmaking and other forms of Home Economics work. In the club work the boys and girls learn

how to do by doing. One thousand two hundred and thirteen boys and 2,045 girls were enrolled in clubs in 1917.

Educational value of the demonstration work, farmers' meetings, movable schools, the club work and community shows is incalculable. The effect is to carry the College to the farmer and home-maker.

Board of Trustees—This board consists of nine persons who are citizens of the State, each appointed by the Governor, with the advice and consent of the Senate, for a term of nine years. Thus under normal conditions one new appointment is made to the board each year. A special act provides that the persons appointed as trustees shall also be appointed as the State Board of Agriculture.

Support—The College is supported by Federal funds and by appropriations of the State Legislature. The first Morrill, or Land Grant, Act of 1862 allotted 210,000 acres of land to Maryland, the proceeds from the sale of which have been invested for the benefit of the College. From this endowment the College receives $5,979 a year. The second Morrill Act of 1890 appropriated $25,000 a year for educational purposes, and the College became the beneficiary. In 1907, by the Nelson Act $25,000 more was appropriated. The purposes to which these amounts may be applied are restricted. Furthermore, a certain proportion of the Federal funds goes for the support of the Eastern Branch of the Maryland State College of Agriculture, which is devoted to the education of the colored race in agriculture and the mechanic arts. The Smith-Hughes Act of 1917 provides annually an increasing amount for the training of teachers in agriculture, the industrial arts and home economics, and in addition gives aid to secondary schools for the promotion of vocational education. The assignment of a portion of this work to the State College of Agriculture brings it into even closer co-operation with the State Board of Education and the schools of the State. The College thus becomes, as it should, the crowning point of the State educational system.

Under the Hatch Act of 1887 and the Adams Act of 1906 $30,000 is appropriated annually by the Federal Government for the organization and support of agricultural experiment stations.

The Smith-Lever Act, passed by Congress in 1914, grants yearly an increasing appropriation for agricultural and home-economics extension work in the State.

In addition to the above Federal funds, appropriations have been made by the State Legislature for the erection of buildings, payment of salaries, etc.

Location and Description—The College is located in Prince George's County, Maryland, on the line of the Washington Branch of the Baltimore and Ohio Railroad, eight miles from Washington and thirty-two miles from Baltimore. At least eight trains a day from each city stop at College Station, thus making the place easily accessible from all parts of the State. Telephone connection is made with the Chesapeake and Potomac lines.

The grounds front on the Baltimore and Washington Boulevard. The suburban town of Hyattsville is two miles to the south, and Laurel, the largest town in the county, is ten miles to the north on the same road. Access to these towns and to Washington may be had by steam and electric railway. The site of the College is particularly beautiful. The buildings occupy the crest of a commanding hill, which is covered with forest trees and overlooks the entire surrounding country. In front, extending to the boulevard, is a broad rolling campus, the drill ground and athletic field. In the rear are the farm buildings and barn. A quarter of a mile to the northeast are the buildings of the Experiment Station. The College farm contains about 300 acres, and is devoted to fields, gardens, orchards, vineyard, poultry yards, etc., used for experimental purposes and demonstration work in agriculture and horticulture.

The general appearance of the College grounds is exceedingly attractive. They are tastefully laid off in lawns and terraces which are ornamented with shrubbery and flower beds. The view from the grove and campus cannot be surpassed.

The location of the College is healthful; the sanitary conditions are excellent. No better proof of this can be given than that there has been practically no serious case of illness among the students for many years.

Health Service—The health of the student body is of prime importance to the College and it is in consequence carefully conserved. A physician is engaged by the College especially for this work. A hospital is maintained in which students, whenever necessary, are put under the care of a trained nurse.

Buildings—The executive and instructional divisions of the College have quarters in the following structures: A brick building, erected in 1894 as a gymnasium and now used temporarily as a library; a chemical building, completed in 1897, used both for instruction in chemistry and for State work in the analysis of fertilizers, feeds and agricultural lime; Morrill Hall, built in 1898, in which the Division of Language and Literature is situated, as well as the Zoological classrooms and laboratories; an engineering building, erected in 1898, which provides suitable quarters for the Departments of Civil, Electrical and Mechanical Engineering and the Departments of Mathematics and Physics; a horticultural building, built in 1915, which contains offices, classrooms and propagating rooms; and a large, modern fireproof building, finished in 1918, which contains the executive offices and is devoted almost exclusively to instruction in the agricultural sciences.

On account of the destruction by fire in 1912 of two of the largest buildings, two temporary structures are in use as an assembly hall and a dining hall. Excellent dormitory accommodations are provided in Calvert Hall, a modern fireproof building erected in 1914. The Armory is also located in it. Other buildings on the campus furnish living quarters for a number of students. A frame building, formerly the president's home, is occupied temporarily by the Department of Home Economics. The College Sanitarium, built in 1901, makes it possible to treat properly any case of illness among the students.

Library—In 1915 the College library and that of the Experiment Station were consolidated, and are now administered

under one head. The first floor of the Library Building is devoted to books and periodicals relating to agriculture and allied sciences. The second floor is used as a general reading room, and also as a stackroom for the more general classes of books.

The combined libraries contain approximately 15,000 books and pamphlets. Most of the leading magazines and newspapers are subscribed for; technical periodicals, as a rule, are deposited in the libraries of the various departments of the College and Experiment Station. Through the generosity of the county press of the State, most of the county papers are available for use by the patrons of the library.

The central, basic idea of the administration of the library is service. It is frankly recognized that the library should be a laboratory for the use of students, members of the faculty and members of the Experiment Station staff; and everything possible is done to make the library popular. The reading rooms are well arranged and lighted, and are in all respects comfortable and convenient. Every facility is offered to those desiring to make researches within the scope of the books and publications on the shelves of the library.

Religious Influences—Provisions in the charter of the College provide that it shall be non-sectarian. From time to time religious services are conducted at the College under the direction of different churches. Churches of practically all denominations are located within a radius of two miles.

Christian Associations—"The moral and spiritual welfare of any community lies within the community itself," and through the Young Men's and Young Women's Christian Associations the students of Maryland State College accept this responsibility. Primary purpose of these organizations is to develop the moral life of the College. The basis of membership is non-sectarian and broad enough to allow every student who stands for Christian ideals to affiliate himself or herself with them. The associations seek to create an atmosphere of democratic good fellowship and high standard among the student body. The Young Men's and Young Women's Christian Associations

are anxious to assist new students in every way possible. Their representative will meet them at the railroad station, direct them to the College, help them get located in their rooms, and make them acquainted with other students and the faculty.

Lectures—Lectures of a general and a technical character have been an important feature of the College activities for several years. The lectures are often given in connection with motion pictures or other special entertainments during the assembly periods, when all students as well as visitors can attend. Aside from the meetings of general interest each division of the College calls in specialists from the various practical fields of activity to lecture to groups of students according to their interests.

Student Organizations—The athletic, social, literary and scientific interests of the College give occasion for various student organizations. These are encouraged as a means of creating class and college pride, and as aids toward the development of the student in his conduct of affairs. In science there are the Agricultural Club, the Engineering Society and the Liebig Chemical Society. To foster public speaking and literary interest there are two literary societies, the Poe and the New Mercer. These are under the direction of the professor of public speaking, which subject every student is required to take. As a further means of stimulating interest in public speaking, there exists the Oratorical Association of Maryland Colleges. This organization is composed of the following colleges: St. John's College, Washington College, Western Maryland College and the Maryland State College. Contests are held annually in rotation at these four institutions. The Rossbourg Club, the county clubs and the fraternities promote wholesome social relations.

Student Publications—"The Maryland State Weekly," the students' newspaper, is issued each week while the College is in session. It is published by a staff representing each class. "The Reveille," a record of general student activity, is brought out at the close of each year by the senior class.

Alumni Association—The alumni of the College, including men of note in all fields of endeavor, through their organization exert a stimulating influence in molding public opinion in behalf of the College and in bettering conditions in the institution. They are also active individually in the development of the College. The association offers medals for excellence in debate and intercollegiate athletic competition, and through its members on the Committee on Physical Training endeavors to promote lofty ideals and high achievement in athletics.

The present officers of the association are: R. Laurie Mitchell, '02, president; George H. Calvert, Jr., '02, vice-president; H. C. Boyd, '03, secretary-treasurer; J. N. Mackall, '05, and F. P. Veitch, '91, members at large of the executive committee, and W. D. Groff, '00, and H. C. Whitford, '01, members of the athletic committee.

Military Instruction—An infantry unit of the senior division of the Reserve Officers' Training Corps has been established at the College under the provisions of the Act of Congress of June 3, 1916. All male students, if citizens of the United States, whether pursuing a four-year or a two-year course of study, are required to take for a period of two years, as a prerequisite to graduation, the military training furnished by the War Department in accordance with the aforementioned act. Three periods a week of not less than one hour each are devoted to this work, of which one period is utilized for theoretical instruction. At the end of the sophomore year a student may volunteer for further training. His record is examined by the president of the College and the professor of military science and tactics. If accepted, the volunteer will, after signing a written agreement prescribed by the Secretary of War, be enrolled for two or more years of training in the Reserve Officers' Training Corps. Such students are required to give fours hours a week to this advanced training, three of which are utilized for theoretical instruction. These students are required also to attend two summer camps of four weeks each. Any student completing this advanced training course is eligi-

ble for appointment by the President of the United States as a Reserve Officer of the United States Army for a period of ten years. They are also eligible for appointment, under certain prescribed conditions, as temporary second lieutenants in the Regular Army for a period of six months.

The Federal Government furnishes uniforms, or commutation therefor, to all members of the Reserve Officers' Training Corps, and also commutation of subsistence to such students as are selected for advanced training during the junior and senior years. The Government furthermore pays the expenses of attendance at the required summer training camps, including traveling expenses.

All physically fit male students, not members of the Reserve Officers' Training Corps, are required by the College regulations to take two hours a week each year of practical drill, unless excused by the President for some satisfactory reason.

College credit is given for work in the Reserve Officers' Training Corps. Since the credits obtained for the first two years of this training are prerequisite to graduation, any student of either sex who for any reason whatever does not take this work must elect approved subjects in place thereof to obtain equivalent credits.

Athletics—Upon the opening of College in the fall athletics will be conducted under a plan of organization tending to give every student an opportunity to take part in some branch of competitive sports. The whole Department of Physical Training is being reorganized so that all students will receive a comprehensive development along natural lines. The preliminary part of the work will consist of squad drills in calisthenics and a thorough examination by a competent physician. The squad drills are to be supplemented by intra-mural athletics, with class organizations as the units. Baseball, track and field, basketball, boxing and wrestling will be the main intra-mural sports. The teams developed for intercollegiate competition will be made up of men selected from the best of those taking part in the regular sports between classes and other units. In intercollegiate competition the College is represented in football,

baseball, track and field, basketball, lacrosse and tennis. The athletics of the College is conducted on principles calculated to give the students development in ethics and character as well as physical strength. The rules governing the eligibility of students for places on teams in intercollegiate competition are more stringent than those of any other institution in Maryland. The department works in conjunction with the Department of Military Science and Tactics.

Student Government—The government of the student body is based on a spirit of pure democracy. The students are taught not only the theory of self-government but the practice. All affairs relating to the student body are adjudicated by a committee composed of four members of the faculty and the presidents of the classes. This committee establishes a definite and close relationship between the faculty and students. The whole idea of government of the student body is based on the honor system, in which each student is trusted to do the "square thing."

Divisions and Courses of Instruction—The College performs its various functions through organization into divisions and departments. These unite in offering a number of closely related courses leading, after four years of general and specialized study, to the bachelor's degree. All courses are practically alike in the freshman year, for this is largely a probationary period in which the student is supposed to determine definitely which of the several courses he wishes to pursue. After the Freshman year a change in course is not permitted unless warranted by exceptional circumstances. A substantial foundation is laid during the first year. The opportunity for specialization and election increases with each succeeding year. Upon reaching the senior year the work of each student is almost wholly specialized.

A student when entering will select the division in which he expects to work, and furthermore will elect his course after consultation with the dean of the division. The divisions and the courses offered by them are given below:

Division of Animal Industry—Courses in Animal Husbandry.

Division of Applied Science—Courses in Chemistry and General Science.

Division of Vocational Education—Courses in Agricultural Education, Home-Economics Education and Industrial Education.

Division of Engineering—Courses in Civil Engineering, Electrical Engineering, Mechanical Engineering and Rural Engineering.

Division of Language and Literature—Auxiliary instruction in Language and Literature.

Division of Plant Industry—Courses in Agronomy, Botany, Entomology, Landscape Gardening and Floriculture, Pomology and Vegetable Culture.

A detailed statement as to the subjects studied in each of these courses will be found under the various divisions. Here may be found also the amount of time given to each subject, its credit value and the opportunity for election. In certain technical courses, such as engineering, little latitude is allowed in selecting subjects, after the student has once settled on a particular course. On the other hand, in the agricultural courses a wide selection is permitted. The reasons for this difference in procedure are obvious when the development of the courses and the character of the subjects are considered.

Short Courses in Agriculture—The short courses in the College are designed especially to meet the demands of young men on the farm who cannot find time to take a regular four-year course, or for those who have not had sufficient educational training for admission to the longer courses. Aside from the winter unit-courses the College offers a Two-Year Agricultural Course and a Three-Year Agricultural Practice Course. The two-year course runs for the entire college year, while the three-year course runs for three months (December, January and February) during the winter.

Short Course in Engineering—A two-year course in Engineering, embodying work in the mechanic arts, is offered to young men who are unable, for various reasons, to take any of the four-year courses in Engineering. It gives an opportunity for training in Mechanics or Electricity at the option of the student.

Graduation, Degrees and Certificates—All four-year courses in the College lead to the degree of Bachelor of Science. The

total requirement for graduation, exclusive of military science, is 204 term credit hours, equivalent to 68 year hours, or 136 semester hours. A term credit hour is one lecture or recitation a week for one term; two or three hours of laboratory or field work are counted equivalent to one lecture or recitation. All practical work is scheduled for three hours, but the instructor concerned is permitted to use two or three, depending upon the nature of the work.

Candidates are recommended for graduation after they have completed the prescribed course of study, including all the required work and enough electives to total 204 credit hours, not including military science. No degrees are given to students in the Two-Year or the Three-Year Agricultural Practice Courses, but at graduation time appropriate certificates are granted to those completing the regular work as outlined.

Graduate Study and Advanced Degrees—The advanced degrees conferred by the College are Master of Science and professional engineering degrees as follows: Civil Engineer, Electrical Engineer and Mechanical Engineer. A candidate for graduate work in science must hold a Bachelor's degree from an institution of recognized standing and present the basic prerequisites to the field in which he wishes to study. For the degree of Master of Science one year of residence wholly devoted to graduate work is required. Under this ruling it will require a student working half time at least two years to qualify for the Master's degree, and one doing less than half-time work three years. While the requirement for the Master's degree is not conditional to the completion of a definite number of hours, the amount of work required should usually aggregate not less than the equivalent of fifteen credit hours per week through the year, inclusive of the thesis. To fulfill the requirements for the Master's degree the student must complete an approved course of study, consisting of a major subject and two minors, one of which must be in a different department from the major and relate in general character to that subject. The minor subjects should aggregate not less than five credit hours nor more than seven per week through the year.

When special organization has been made for that purpose, credit may be given for research carried on in the Department of Agriculture of the United States Government. The Experiment Station also offers considerable opportunity for research of a graduate character.

Admission to graduate work does not necessarily imply admission to candidacy for a degree. Those seeking admission to graduate work should request an application blank and further information from the registrar. A candidate for the Master's degree must present his application for admission to candidacy not less than six months prior to the date at which the degree is sought. Admission to candidacy is based upon ability to pursue graduate work as exemplified in the official reports upon the student's course. A student will not be admitted to candidacy until he has completed the equivalent of one term of graduate work.

A satisfactory thesis is required, the subject of which, together with the written approval of the professor in charge of the major, must be filed with the chairman of the Graduate Committee not later than the close of the first term of the academic year in which the degree is sought. The completed manuscript ready for typewriting shall be submitted to the professor in charge for correction and approval not later than two weeks prior to commencement day.

The advanced professional degrees in engineering will be granted only to graduates of this College, who have obtained the Bachelor's degree in engineering. A candidate for the degree of Civil Engineer, Electrical Engineer or Mechanical Engineer must satisfy the following conditions:

1. He shall have been engaged in acceptable engineering pursuits for not less than three years.

2. His application for a degree must be approved twelve months prior to the date at which the degree is sought.

3. He shall present a satisfactory thesis.

4. He shall present with his application a complete report of his engineering experience and an outline of his thesis.

5. He must be considered eligible by a committee composed of the heads of the Civil, Electrical and Mechanical Engineering Departments, to whom his application must be referred.

Unclassified Students—Mature persons who have had insufficient preparation to pursue any of the four-year courses may, with the consent of the Committee on Courses, matriculate for such subjects as they are fitted to take. Such students, however, will be ineligible for a degree until they have satisfied the entrance requirements and completed an approved four-year course of study.

Sub-Collegiate Work—Until recently the College maintained a sub-collegiate department for the benefit of students registering with deficiencies. At the present time a plan is under consideration which will afford students an opportunity to remove such deficiencies in a nearby high school. It may be possible for students not having the advantages of a high school in their community to do several years of high school work under this co-operative plan.

Examinations and Reports—Final examinations are held at the close of each term. The final grades are made from these examinations and the daily averages. Detailed reports of the students' standing are sent to parents and guardians at the end of every term. Special reports of deficiencies, failures or misconduct are sent whenever deemed necessary.

Admission Requirements of the College—In general the requirements for admission to the freshman class are the same as those prescribed for graduation by the approved high schools of Maryland. An applicant must offer for admission at least 15 units of credit by examination, or by a certificate from an approved high school or its equivalent. A unit represents a year's study in any subject in a secondary school and constitutes approximately a quarter of a full year's work. It presupposes a school year of 36 to 40 weeks, recitation periods of from 40 to 60 minutes, and for each study four or five class exercises a week. Two laboratory periods in any science or vocational study are considered as equivalent to one class exercise.

Of the fifteen units presented, seven are specifically designated—eight for Division of Engineering—and eight may be elected from any subject that the high school offers toward graduation. A deficiency of two units is approved under the condition that the student remove such conditions within 12 months after matriculation.

Students are admitted without examination, if they can present certificates showing that they have completed the necessary entrance subjects. The certificates persented by the candidates must be officially certified by the principals of the schools attended and must state in detail the work completed. Blank certificates conveniently arranged for the desired data will be sent upon application.

Candidates not admitted by certificates will be required to take written examinations on the entrance subjects. These examinations are offered in June and September. Exact dates will be sent upon request.

REQUIRED AND ELECTIVE SUBJECTS

Prescribed Units

English	3
Mathematics	2 (For Engineering 3)*
Science	1
History	1
Total	7 (For Engineering 8)

Elective Units (eight)—To be selected from the following subjects:

Agriculture,
Astronomy,
Botany,
Chemistry,
Civics,
Commercial subjects,
Economics,
English,
General Science
Geology,
History,
Home Economics,
Industrial subjects,
Language,
Mathematics,
Physical Geography,
Physics,
Physiology,
Zoology.

*Additional unit includes Algebra, ½; Solid Geometry, ½.

A student coming from a standard college or university may secure advanced standing by presenting a statement of his complete academic record certified by the proper officials. This statement must be accompanied by a set of secondary school credentials presented for admission to the college or university. Full credit is given for work done in other institutions when found to be equivalent in extent and quality to that required at this College. An applicant may request examination for advanced credit in any subject. In case the character of a student's work in any subject is such as to create doubt as to the quality of that which preceded, the College explicitly reserves the right to revoke at any time any credit assigned on certificate.

Registration—The College year begins October 1 and ends May 30. (See calendar on Page 1.) Monday, September 30, and Tuesday, October 1, are devoted to matriculation and registration of students for the first term. Registration for the second and third terms takes place on the first day of the terms as indicated by the calendar.

Candidates for the freshman class should go at once to the new agricultural building, where they will find a committee in charge of matriculation and registration.

Upper classmen should consult their advisers or deans and then proceed in the regular way. Students are not admitted to classes for which they are not registered in due form.

Lectures and practical work begin as scheduled on Wednesday, October 2.

Expenses—Average expenses of a student for each year range around $300. The College is not organized as a money-making institution, consequently holds expenses to a minimum. Board is one item which fluctuates somewhat under present conditions, but not sufficiently to make any material difference in the outlay for the year. Board and lodging are furnished on a wholesale cost basis.

SUMMARY OF EXPENSES

Fixed overhead charges, physical training, hospital fees, book rental, etc.	$50.00
Laboratory fees	12.00
Damage fee*	5.00
Board, lodging and laundry†	239.00
Total	$306.00

*Unexpended portion refunded at end of year.
†Average cost.

A fee of $5 for the diploma will be charged each student to whom a Bachelor's degree is granted.

Each graduate student is subject to a registration fee of $10, payable at time of registration; $10 per term for tuition and $10 for diploma, payable before degree is conferred.

Students taking the short course in Agricultural Practice are subject to charges of $20 for fixed overhead charges, hospital fee, book rental, laboratory fee, etc., and $7.50 per week for board, lodging and laundry.

A deposit fee of $5 is required of each student desiring to reserve a room in one of the dormitories. Such reservations may be made on or after June 1. This fee will be credited to the student's account, but if he fails to return to or enter College it will be forfeited.

Students entering College after November 1, or withdrawing before close of scholastic year, will be charged $7 per month for fixed charges and $8 per week for board, room and laundry. Students withdrawing less than two weeks after entrance will be charged $2 per day, and students withdrawing more than two weeks, but less than one month, after entrance will be charged for one month's attendance.

In case of illness requiring a special nurse and special medical attention, the expenses must be borne by the student.

All College expenses are payable in advance, and no diploma will be conferred upon, nor any certificate issued to, a student who is in arrears in his account.

When a student withdraws from College he is required to give formal notification in writing in separate communications to the Registrar and Accountant. Charges for full time will be continued against him unless this is done.

Students rooming outside the College may obtain board and laundry from the College at same rates as those living in dormitories.

Day students may get lunch at nearby lunchrooms.

All College property in possession of the individual student is charged against him, and the parent or guardian must assume responsibility for its return without injury other than results from ordinary wear.

Damage to College property will be charged to the whole student body pro rata unless the offender is known.

All students assigned to dormitories are required to provide themselves with one pair blankets for single bed, two pairs sheets for single bed, four pillow cases, six towels, one pillow and two clothes bags.

There will be no refund of laboratory fees upon withdrawal of a student after the middle of a term.

There will be no refund of fixed charges or laboratory fees upon the withdrawal of a student after the middle of the term for which charge is made.

Uniform—Members of the Student Battalion must appear in uniform at all military formations and at other specified times. The uniforms worn by the members of the Reserve Officers' Training Corps under normal conditions are furnished by the War Department. It is possible, however, that with the great demand for uniforms for the army the Government will not be able to supply uniforms for the members of the Reserve Officers' Training Camp, but will provide commutation which will meet, at least in part, the cost of the uniforms provided by these students. Students required to drill under the provisions of the "Land Grant Act" of 1862, who are not members of the Reserve Officers' Training Corps, must furnish their own uniforms.

Prices fluctuate to such an unusual degree at this time that it is not possible to state definitely the cost of a uniform not provided by the Government, but it should not exceed $30. A deposit covering the cost of a uniform purchased under a College contract must be made with the Accountant in advance. No uniform will be paid for by the College until it is approved by the Professor of Military Science and Tactics.

The uniform consists of one pair breeches, woolen, olive drab; one cap, olive drab; one pair leggings, canvas; one cap and collar ornament, set; one pair shoes, russet; one shirt, flannel, olive drab, and one regulation tie.

Scholarships and Financial Aid—Although no endowment or loan fund exists with which to assist needy students, there are many opportunities for students to earn at least a portion of their expenses. Means of self-help, however, are afforded only to such students as show ability to carry work in addition to their College course, and to those who are disposed to assume such extra duties willingly. Scholarships are offered as indicated below:

To encourage worthy young men who desire a collegiate education, the Board of Trustees has established for each high school in Maryland and the District of Columbia one scholarship each year, to be awarded under the following conditions:

1. The person awarded a scholarship must be a graduate of a high school and qualified to enter the freshman class. He must also be of approved moral character.

2. The appointment to a scholarship shall be made by the school superintendent, upon the recommendation and certification of the principal of the high school.

The principal of the high school may recommend one or more persons for appointment, with information as to the merits of each case. In making appointments, not only class standing but inability to meet the financial expenses of an education should be given consideration.

3. The appointment shall be made for the term normally required to complete the course selected.

4. Each scholarship has the value of $50 per year. This amount will be credited to the holder's account.

5. The scholarship will be forfeited by indifference to scholastic work or by disregard of rules of the College.

6. The scholarship will be forfeited in case the holder fails of promotion at the end of any scholastic year, unless there are extenuating circumstances.

There has also been established one scholarship each year for graduates of each preparatory school in Maryland and the District of Columbia in which the standard is of such a character as to qualify the appointee for entrance to the freshman class. The conditions governing these scholarships are the same as for the high schools, except that the appointment shall be made by the principal of the preparatory school.

Division of Plant Industry

OFFICERS OF INSTRUCTION

P. W. ZIMMERMAN..Dean, Professor of Plant Industry.
J. B. WENTZ.....Professor of Agronomy.
C. E. TEMPLE.....Professor of Plant Pathology, State Pathologist.
E. F. STODDARD.....Professor of Vegetable Gardening.
H. BECKENSTRATER..Professor of Pomology.
B. W. ANSPON.....Professor of Landscape Gardening and Floriculture.
J. B. S. NORTON....Professor of Botany and Vegetable Pathology.
R. C. ROSE.....Associate Professor of Botany.
E. N. CORY.....Professor of Entomology, State Entomologist.
C. J. PIERSON.....Assistant Professor of Zoology.
O. C. BRUCE.....Professor of Soils.

INTRODUCTION

The Division of Plant Industry is composed of the following departments:

1. Agronomy.
 a. Forage Crops.
 b. Grain Crops.
2. Soils and Soil Fertility.
3. Horticulture.
 a. Vegetable Gardening.
 b. Pomology.
 c. Landscape Gardening and Floriculture.
4. Forestry.
5. Economic Botany.
 a. General Botany.
 b. Plant Physiology.
 c. Plant Pathology.
6. Economic Zoology.
 a. General Zoology.
 b. Entomology.
 c. Bee Culture.

Students are permitted to specialize in any of the above-mentioned departments except Forestry. Prospective students for Agronomy, Soils or Horticulture who have not had satisfactory practical experience on a farm before entering College will be required to spend from three to six months on an approved farm before graduation.

The subjects required in the freshman year are the same in all departments, but at the end of the year students are expected to make a decision in regard to their line of special-

ization. The junior and senior years are devoted largely to special subjects and electives. At least 25 per cent. of the total hours required for graduation are necessary to specialize in a subject. With a wide leeway for electives it is possible for a student to take as much work in another department as in his special subject. It is possible, therefore, for a student to get either a special or a general training in agriculture. Specialists who expect to carry on investigational work after leaving College are urged to remain for graduate work.

OUTLINE OF COURSES OFFERED

The required and elective work of the various departments of the division is outlined on the following pages. The College reserves the right to withdraw any course at any time:

AGRONOMY AND SOILS

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
English 101—Composition and Rhetoric	3(1)	3(1)	3(1)
Public Speaking 101	(2)	(2)	(2)
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Zoology 101—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6)
Freshman Lectures	1	1	1
Industrial History, or Mathematics, or Language	4	4	4
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Agronomy 101—Cereal Crops	3(3)		
Soils 101—Introductory Study of Soils		3(3)	
Geology 102—General Geology			3(3)
Botany 102—Plant Histology	2(3)		
Botany 103—Plant Physiology		2(6)	
Botany 104—Plant Physiology			2(6)
Pomology 101—Principles of Pomology	3(3)		
Landscape and Floriculture 101—Principles of Landscape Gardening		3(3)	
Vegetable Gardening 101—Principles of Vegetable Gardening			3(3)
Agronomy 102—Grain Judging		(3)	
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
Elective	6	4	5
JUNIOR YEAR.			
Soils 102—Continuation of 101	2(3)		
Agronomy 103—Forage Crops			3(3)
Rural Economics 102—Principles of Economics	3	3	
English 103—Technical Composition	2	2	2
Botany 110—Genetics		3	
Bacteriology 101—General Bacteriology	1(6)		
Soils 103—Principles of Soil Management		1(6)	
Agronomy 106—Marketing and Grading of Farm Crops		1(3)	
Soils 104—Fertilizers			2(3)
Military Instruction—Advanced Course	R	R	R
Elective	6	4	8
SENIOR YEAR.			
Rural Economics 107—Farm Management		3(3)	3(3)
Agronomy 104—Crop Breeding		2(3)	(3)
Agronomy 105—Methods in Crop Investigation	2(3)		
Agronomy 108—Crop Rotation	2		
Soils 105—Advanced Soils	1(6)		
Soils 106—Methods in Soil Investigation			1(6)
Agronomy 109—Seminar		1	
Military Instruction 104—Advanced Course	R	R	R
Elective	9	9	9

VEGETABLE GARDENING

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
English 101—Composition and Rhetoric	3(1)	3(1)	3(1)
Public Speaking 101	(2)	(2)	(2)
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Zoology 101—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6)
Freshman Lectures	1	1	1
Industrial History, or Mathematics, or Language	4	4	4
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Agronomy 101—Cereal Crops	3(3)		
Soils 101—Introductory Study of Soils		3(3)	
Geology 102—General Geology			3(3)
Botany 102—Plant Histology	2(3)		
Botany 103—Plant Physiology		2(6)	
Botany 104—Plant Physiology			2(6)
Pomology 101—Principles of Pomology	3(3)		
Landscape and Floriculture 101—Principles of Landscape Gardening		3(3)	
Vegetable Gardening 101—Principles of Vegetable Gardening			3(3)
Agronomy 102—Grain Judging		(3)	
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
Elective	6	5	5
JUNIOR YEAR.			
Soils 102—Continuation of Soils 101	2(3)		
Agronomy 103—Forage Crops			3(3)
Rural Economics 102—Principles of Economics	3	3	
English 103—Technical Composition	2	2	2
Vegetable Gardening 102—Tuber and Root Crops	2(3)		
Vegetable Gardening 103—Commercial Vegetable Gardening		2(6)	2(6)
Military Instruction 103—Advanced Course	R	R	R
Elective	6	8	7
SENIOR YEAR.			
Rural Economics 107—Farm Management		3(3)	3(3)
Vegetable Gardening 103—Commercial Vegetable Gardening continued	2(6)		
Vegetable Gardening 111—Systematic Olericulture	1(6)		
Vegetable Gardening 113—Horticulture Seminar		1	
Military Instruction 104—Advanced Course	R	R	R
Elective	10	12	13

POMOLOGY

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
English 101—Composition and Rhetoric	3(1)	3(1)	3(1)
Public Speaking 101	(2)	(2)	(2)
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Zoology 101—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6)
Freshman Lectures	1	1	1
Industrial History, or Mathematics, or Language	4	4	4
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Agronomy 101—Cereal Crops	3(3)		
Soils 101—Introductory Study of Soils		3(3)	
Geology 102—General Geology			3(3)
Botany 102—Plant Histology	2(3)		
Botany 103—Plant Physiology		2(6)	
Botany 104—Plant Physiology			2(6)
Pomology 101—Principles of Pomology	3(3)		
Landscape and Floriculture 101—Principles of Landscape Gardening		3(3)	
Vegetable Gardening 101—Principles of Vegetable Gardening			3(3)
Agronomy 102—Grain Judging		(3)	
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
Elective	6	5	5
JUNIOR YEAR.			
Soils 102—Continuation of 101	2(3)		
Agronomy 103—Forage Crops			3(3)
Rural Economics 102—Principles of Economics	3	3	
Pomology 102—Commercial Pomology	1(3)		
Pomology 103—Fruit Judging	(3)	(3)	
Pomology 104—Practical Pomology		2(3)	(6)
Pomology 105—Small Fruit Culture			2(3)
English 103—Technical Composition	2	2	2
Botany 110—Genetics		3	
Military Instruction 103—Advanced Course	R	R	R
Elective	6	5	6
SENIOR YEAR.			
Rural Economics 107—Farm Management		3(3)	3(3)
Pomology 107—Systematic Pomology	1(6)	(6)	
Pomology 109—Origin, Improvement and Breeding of Fruits			2(3)
Seminar		1	
Military Instruction 104—Advanced Course	R	R	R
Elective	14	11	10

LANDSCAPE GARDENING AND FLORICULTURE

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
English 101—Composition and Rhetoric	3(1)	3(1)	3(1)
Public Speaking 101	(2)	(2)	(2)
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Zoology 101—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6)
Freshman Lectures	1	1	1
Industrial History, or Mathematics, or Language	4	4	4
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Agronomy 101—Cereal Crops	3(3)		
Soils 101—Introductory Study of Soils		3(3)	
Geology 102—General Geology			3(3)
Botany 102—Plant Histology	2(3)		
Botany 103—Plant Physiology		2(6)	
Botany 104—Plant Physiology			2(6)
Pomology 101—Principles of Pomology	3(3)		
Landscape and Floriculture 101—Principles of Landscape Gardening		3(3)	
Vegetable Gardening 101—Principles of Vegetable Gardening			3(3)
Agronomy 102—Grain Judging		(3)	
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
Elective	6	5	5
JUNIOR YEAR.			
Soils 102—Continuation of 101	2(3)		
Agronomy 103—Forage Crops			3(3)
Rural Economics 102—Principles of Economics	3	3	
English	2	2	2
Landscape and Floriculture 102—Plant Materials			2(3)
Landscape and Floriculture 107—Histology of Landscape Gardening		(3)	
Landscape and Floriculture 108—Floriculture	2(3)		
Landscape and Floriculture 109—Commercial Floriculture		2(3)	
Landscape and Floriculture 110—Commercial Floriculture			2(3)
Military Instruction 103—Advanced Course	R	R	R
Elective	6	8	5
SENIOR YEAR.			
Rural Economics 107—Farm Management		3(3)	3(3)
Landscape and Floriculture 103—Landscape Design	2(3)		
Landscape and Floriculture 104—Landscape Design		2(3)	
Landscape and Floriculture 105—Landscape Practice			1(6)
Landscape and Floriculture 106—Civic Art	1(3)		
Landscape and Floriculture 111—Greenhouse Construction	2(3)		
Landscape and Floriculture 112—Floral Decorating		(3)	
Landscape and Floriculture 113—Garden Flowers			2(3)
Landscape and Floriculture 115—Tree Repair	1(6)		
Military Instruction 104—Advanced Course	R	R	R
Elective	5	9	7

BOTANY

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
English 101—Composition and Rhetoric	3(1)	3(1)	3(1)
Public Speaking 101	(2)	(2)	(2)
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Zoology 101—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6)
Freshman Lectures	1	1	1
Industrial History, or Mathematics, or Language	4	4	4
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Agronomy 101—Cereal Crops	3(3)		
Soils 101—Introductory Study of Soils		3(3)	
Geology 102—General Geology			3(3)
Botany 102—Plant Histology	2(3)		
Botany 103—Plant Physiology		2(6)	
Botany 104—Plant Physiology			2(6)
Pomology 101—Principles of Pomology	3(3)		
Landscape and Floriculture 101—Principles of Landscape Gardening		3(3)	
Vegetable Gardening 101—Principles of Vegetable Gardening			3(3)
Agronomy 102—Grain Judging		(3)	
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
Elective	6	5	5
JUNIOR YEAR.			
Soils 102—Continuation of Soils 101	2(3)		
Agronomy 103—Forage Crops			3(3)
Rural Economics 102—Principles of Economics	3	3	
English 103—Technical Composition	2	2	2
Chemistry 108—Organic Chemistry	3(3)		
Botany 110—Genetics		3	
Botany 112—Systematic Botany			1(6)
Military Instruction 103—Advanced Course	R	R	R
Elective	5	9	8
SENIOR YEAR.			
Rural Economics 107—Farm Management		3(3)	3(3)
Botany 111—Plant Ecology			1(6)
Botany 113—Plant Morphology		1(6)	
Botany 115—Seminar		1	
Botany 116—Plant Micro-Chemistry		1(6)	
Botany 114—Methods in Histology	(6)		
Botany 105—General Plant Pathology	2(3)		
Chemistry 111—Physiological Chemistry	3(3)		
Military Instruction 104—Advanced Course	R	R	R
Elective	8	6	10

ECONOMIC ZOOLOGY

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
English 101—Composition and Rhetoric	3(1)	3(1)	3(1)
Public Speaking 101	(2)	(2)	(2)
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Zoology 101—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6)
Freshman Lectures	1	1	1
Industrial History, or Mathematics, or Language	4	4	4
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Botany 102—Plant Histology	2(3)		
Botany 103—Plant Physiology		2(6)	
Botany 104—Plant Physiology			2(6)
Chemistry 105—Quantitative Analysis	1(6)	1(6)	
Zoology 102—Histology and Embryology	2(6)	2(6)	2(6)
Zoology—103—Entomology			2(3)
English 102—Advanced Composition	2	2	
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
Elective	5	4	6
JUNIOR YEAR.			
Public Speaking	1	1	1
Chemistry 108—Organic Chemistry	3(3)	3(3)	
Zoology 108—Systematic Entomology	2(6)	2(6)	2(6)
Botany 112—Systematic Botany			1(6)
English 103—Technical Composition	2	2	2
Military Instruction 103	R	R	R
Elective	7	7	8
SENIOR YEAR.			
Bacteriology 101—General Bacteriology	1(6)	1(6)	1(6)
Zoology 107—Economic Entomology	3(6)	3(6)	3(6)
Military Instruction 104—Advanced Course	R	R	R
Elective	9	9	9

SUGGESTED ELECTIVES FOR STUDENTS MAJORING IN THE DIVISION OF PLANT INDUSTRY

SUBJECT.	TERM.		
SOPHOMORE YEAR.	I	II	III
Animal Husbandry 101—General Animal Husbandry	3(3)		
Animal Husbandry 102—Live Stock Management		2(3)	
Animal Husbandry 103—Principles of Breeding			2(3)
Drawing 107—Mechanical Drawing	(3)		
Shop 104—Wood Work		(3)	
Shop 107—Forging and Pipe Fitting			(3)
Physics 104—General Physics	2(3)	2(3)	2(3)
Chemistry 103—Qualitative Analysis	1(3)		
Chemistry 104—Quantitative Analysis	1(6)	1(6)	
Chemistry 105—Quantitative Analysis		1(6)	1(6)
Zoology 103—Entomology			2(3)
Botany 111—Plant Ecology			1(6)
Modern Language	3	3	3
Advanced Composition	2	2	2
Literature	2	2	2
Public Speaking	1	1	1
Agronomy 101—Cereal Crops	3(3)		
Agronomy 102—Grain Judging		3(3)	
Pomology 101—Principles of Pomology	3(3)		
Floriculture and Landscape 101—Principles of Landscape Gardening		3(3)	
Vegetable Gardening 101—Principles of Vegetable Gardening			3(3)
JUNIOR YEAR.			
Animal Husbandry 104—Animal Nutrition		3(3)	
Animal Husbandry 105—Stock Judging			1(3)
Animal Husbandry 108 or 109—Production		1(3)	
Animal Husbandry 111—Anatomy and Physics	3		
Animal Husbandry 113—Dairy Management		2(3)	
Animal Husbandry 114—Farm Dairying			1(3)
Animal Husbandry 118—Farm Poultry		3	
Animal Husbandry 119—Poultry Practice			(3)
Agronomy 103—Forage Crops			3(3)
Agronomy 104—Crop Breeding		2(3)	1(3)
Agronomy 106—Marketing and Grading		1(3)	
Agronomy 108—Crop Rotation	2		
Soils 104—Fertilizers			2(3)
Botany 110—Genetics		3	
Botany 112—Systematic Botany			1(6)
Botany 105—Plant Pathology	2(3)		
Botany 106—Methods in Pathology		2(3)	
Botany 107—Diseases of Horticultural Plants			2(3)
Botany 108—Diseases of Cereal and Forage Crops			1(3)
Pomology 102—Commercial Pomology	1(3)		
Pomology 104—Practical Pomology		2(3)	(6)
Pomology 103—Fruit Judging	(3)	(3)	
Vegetable Gardening 108		1(3)	1(3)
Vegetable Gardening 102—Tuber and Root Crops	2(3)		
Landscape and Floriculture 102—Plant Materials			2(3)
Landscape and Floriculture 115—Tree Repair	1(6)		
Landscape and Floriculture 112—Floral Decoration		(3)	
Mathematics 101—Trigonometry	5		
Mechanical Engineering 107—Farm Machinery		3(3)	
Surveying and Drainage			4
Chemistry 107—Agricultural Organic Chemistry	2(3)		
Chemistry 108—Organic Chemistry		3(3)	3(3)
Chemistry 109—Agricultural Chemistry	3		
Chemistry 110—Agricultural Chemical Analysis	(6)		
Chemistry 111—Physiological Chemistry	3(3)		
History and Government 102—Business Law	2	2	2
Modern Language	3	3	3
English—A	2	2	2
English—B	2	2	2
Oratory	1	1	1

SUGGESTED ELECTIVES FOR STUDENTS MAJORING IN THE DIVISION OF PLANT INDUSTRY—Concluded

SUBJECT.	TERM.		
SENIOR YEAR.	I	II	III
Animal Husbandry 106—Advanced Stock Judging	1(3)		
Animal Husbandry 109—Production		1(3)	
Animal Husbandry 112—Animal Diseases		3(3)	
Agronomy 107—Classification of Farm Crops			1(3)
Bacteriology	3(3)		
Botany 116—Plant Micro-Chemistry		(6)1	
Hydraulics 110—Advanced Drainage			1(3)
Landscape and Floriculture 103—Landscape Design	2(3)		
Landscape and Floriculture 106—Civic Art	1(3)		
Landscape and Floriculture 113—Garden Flowers			2(3)
Mechanical Engineering 108—Advanced Farm Machinery	1(3)		
Mechanical Engineering 109—Gas Engines		3(3)	
Pomology 102—Commercial Pomology	2(3)		
Pomology 105—Small Fruit Culture			2(3)
Pomology 106—Nut Culture, Citrus and Sub. Tropical Fruits		2	
Pomology 107—Systematic Pomology	1(6)	(6)	
Pomology 108—Advanced Pomology	1(6)		(6)
Pomology 109—Origin, Improvement and Breeding of Fruits			2(3)
Soils 103	1(6)		
Structural Designing 109—Farm Buildings	2		
Vegetable Gardening 105—Vegetable Forcing	1(6)	1(6)	
Vegetable Gardening 106—Vegetable Forcing			(6)
Vegetable Gardening 110—Vegetable Growing for Canning	2(3)		
Vegetable Gardening 112—Advanced Vegetable Gardening	3(3)	3(3)	3(3)
Zoology 111—Horticultural Entomology			2(3)
Zoology 104—Insecticides and Their Application		1(3)	
Psychology	3(3)		
Modern Language—A	3	3	3
Modern Language—B	5	5	5
Public Speaking	1	1	1
English—A	2	2	2
English—B	2	2	2

DESCRIPTION OF SUBJECTS OFFERED

Following are descriptions of the courses offered by the various departments in the Division of Plant Industry:

AGRONOMY

Introduction—The course in Agronomy is designed to acquaint the student with the fundamental principles in the production and utilization of field crops. The first two years include the usual scientific and cultural subjects of a College course, while the last two are devoted chiefly to the technical subjects. Students graduating from the course in Agronomy should be well fitted for general farming, investigational work in State or Federal Experiment Stations, or for county agent work.

Agro. 101: Cereal Crops—A study of the history, distribution, culture, uses and improvement of cereal crops. The laboratory work is devoted to studies of the plant and grain of the cereal crops with detailed descriptive study of the grain. Prereq. Bot. 101.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

Agro. 102: Grain Judging—Practice in judging the cereal crops for milling, seeding and feeding purposes. Prereq. Agro. 101.

Practice, 3 hours; 2d term. Credit 1.

Agro. 103: Forage Crops—A study of the history, distribution, adaptation, culture and uses of forage and pasture crops. The laboratory periods are devoted to the identification and classification of plants and seeds of hay and pasture crops, purity and viability of the seeds, and physiological studies of the plants. Prereq. Bot. 101 and Soils 101.

Lectures, 3 hours; practice, 3 hours; 3d term. Credit 4.

Agro. 104: Crop Breeding—In this course the principles of breeding are applied to field crops and detailed studies made of methods used in crop improvement work. Prereq. Bot. 101-102; Genetics 110.

Lectures, 2 hours; practice, 3 hours, 2d term; practice, 3 hours, 3d term. Credit 4.

Agro. 105: Methods in Crop Investigations—This course deals with methods used by Experiment Stations in crop investigational work. The work of different stations on certain problems is classified with the view of the standardization of methods. Students are required to make reports on and criticize methods used by the different stations in attacking the problems studied. Prereq. Agro. 101-103; Soils 101.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Agro. 106: Marketing and Grading Farm Crops—A study of market classifications and grades as recommended by the United States Bureau of Markets. The students make a study of such documents as the Grain Standardization Act and Rules and Regulations pertaining thereto. Practice is given in the laboratory in grading of grains according to the latest standards and regulations. Prereq. Agro. 101-102-103.

Lecture, 1 hour; practice, 3 hours; 2d term. Credit 2.

Agro. 107: Classification of Farm Crops—Botannical classification of crop plants. Prereq. Agro. 101-103.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

Agro. 108: Crop Rotation—This course is designed to give the student a thorough knowledge of the principles and practice of crop rotation. Rotations used in this State and other States and the scientific principles involved are studied. Prereq. Agro. 101-103.

Lectures, 2 hours, 1st term. Credit 2.

Agro. 109: Seminar—The seminar is devoted largely to reports by students on current bulletins and scientific papers dealing with the problems in farm crops. Prereq. Agro. 104 and Soils 101-102.

Lecture, 1 hour, 2d term. Credit 1.

Agro. 110: Research and Thesis—Investigation in problems pertaining to farm crops. The work is carried on largely in laboratory, library and field, and the results written in thesis form.

Lectures and practice to fit needs; the year. Credit 6.

GRADUATE WORK

Agro. 201: Biometry—A study of statistical methods as applied to problems in Genetics and Plant Breeding. The methods used in the study of variations and correlations are discussed and the biometrical constants worked out by the class for certain assigned data.

First term. Credit 2.

Agro. 202: Crop Breeding—The content of this course is similar to the undergraduate course in Crop Breeding, but will be adapted more to graduate students and more of a range will be allowed in choice of material to suit special cases.

Lectures, 3 hours; practice, 3 hours; 2d term. Credit 4.

Agro. 203: Research—With the approval of the head of the department, the student will be allowed to work on any problem in crops or he will be given a list of suggested problems from which he may make a selection.

Hours to be arranged to suit individual cases; the year. Credit 9.

Agro. 1: Cereal Crops—A study of the history, distribution, adaptations, uses and culture of cereal crops, a larger part of the term being spent on corn and wheat.

Three lectures and 3 hours; practical work; 1st term.

Agro. 2: Forage Crops—A study of the history, distribution, adaptations, uses and culture of forage and cover crops adapted to Maryland conditions.

Lectures, 3 hours; practice, 3 hours; 3d term.

Agro. 3: Grain Judging—A laboratory course in judging grains from the standpoint of the grower, the feeder and the miller.

Practice, 2 hours, 2d term.

Agro. 4: Advanced Agronomy—Students specializing in Agronomy are given special work in judging and grading grains, crop improvement and various other phases of crop production. Students are allowed to elect subjects in other departments for part of the time.

Lectures, 2 hours; practice, 4 hours; 1st term. Lectures, 2 hours; practice, 3 hours; 2nd term. Lectures, 3 hours; practice, 4 hours; 3d term.

SOILS

Introduction—The subject of soils is very closely allied to the subject of Agronomy, and for that reason the schedule of study is the same for both. Students majoring in the course should be well fitted for general farming or investigational work.

Soils 101: Introductory Study of Soils—The origin, classification, physical and chemical properties of soils in their relation to tillage and the maintenance of soils fertility. Field excursions are conducted for the purpose of studying soil formation and problems of drainage. The practical work consists mainly of experiments and demonstrations in soil physics.

Lectures, 3 hours; practice, 3 hours; 2d term. Credit 4.

Soils 102: Soils—A continuation of 101-b.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Soils 103: Principles of Soil Management—A laboratory course dealing with special problems of soil management and soil analysis intended for students specializing in Agronomy. A special study is made of soils from the College Farm which have been subjected to different methods of cropping treatment. Prereq. Agro. 110-a-b and 101 and 103.

Lecture, 1 hour; practice, 6 hours; 2d term. Credit 3.

Soils 104: Fertilizers—The subject of fertilizers is developed logically from the needs of the plant and the condition of the soil to the selection of proper plant food for each crop under varying conditions of soils and climate. Some attention is given to the home-mixing of fertilizers. Prereq. Soils 101-b.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Soils 105: Advanced Soils—A study of the principal soil regions, series and types of the United States and especially of the soils of Maryland as to origin, formation and composition and value from the agricultural point of view. Prereq. Soils 101-b.

Lecture, 1 hour; practice, 6 hours; 1st term. Credit 3.

Soils 106: Methods in Soil Investigation—A study of methods used by Experiment Stations in soil problems and technique of laboratory methods. Prereq. Soils 101-102; Agro. 101-103.

Lecture, 1 hour; practice, 6 hours; 3d term. Credit 3.

Soils 107: Research and Thesis—Investigational work of problems pertaining to soils. The work is carried on largely in laboratory, library and field, and the results written in thesis form.

Lecture, 1 hour; practice, 3 hours; the year. Credit 6.

Soils 201: Advanced Soils—A survey of latest investigations in soils and fertilizers, conducted by means of lectures, references and practical work.

First term. Credit 3.

Soils 202: Research in Soils—Original investigation of problems in soils and fertilizers.

Lectures and practice to be arranged; the year. Credit 12.

Soils 1: General Soils—A study of the physical and chemical conditions of the soils in their relation to profitable agriculture.

Three lectures and 3 hours; practical work; 3d term.

Soils 2: Fertilizers—The selection of proper plant food for each crop under varying conditions of soil and climate. Special attention is given to the home-mixing of fertilizers.

Lectures, 2 hours; practice, 2 hours; 1st term.

VEGETABLE GARDENING

Introduction—The course in vegetable gardening is intended to prepare students for the following purposes: Commercial vegetable gardening on truck farms, market gardens or under glass; home vegetable gardening, investigational work, teaching and allied lines of work connected with growing, marketing and storage of horticultural products.

Veg. G. 101: Principles of Vegetable Gardening—This course includes a study of the different types of vegetable gardening, methods of propagation, construction and management of hotbeds and cold frames, growing early vegetable plants under glass and methods of planting, cultivating and harvesting under irrigation and in a large "Farmers' Garden."

Lectures, 3 hours; practice, 3 hours; 3d term. Credit 4.

Veg. G. 102: Tuber and Root Crops—A study of white potatoes and sweet potatoes, including considerations of seed, varieties, propagation, soils, fertilizing, planting, cultivating, spraying, harvesting, storing and marketing. Prereq. Veg. G. 101.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 3.

Veg. G. 103: Commercial Vegetable Gardening—The methods employed by truckers and market gardeners in commercial production, equipment, use of hotbeds and cold frames, field planting, rotation of crops and irrigation. Cultural directions for all vegetables are given, including their requirements, varieties, tillage, control of insects and diseases, grading, packing, storage and marketing. Each student plans and manages intensive cropping systems on small areas and under irrigation, and extensive planting on larger areas in a six-year rotation. Trips are taken to markets and vegetable farms, and the students work during the summer on commercial vegetable farms. Prereq. V. G. 1.

Lectures, 2 hours; practice, 6 hours; 2d, 3d and 1st terms. Credit 12.

Veg. G. 104: Commercial Vegetable Gardening—This course is arranged for students in other departments who wish to know something about the production of vegetables for commercial purposes. Cultural directions are given for the most important crops—harvesting, packing and marketing. The practical work includes the starting of early vegetable plants in frames, and practice in planning, planting and managing vegetable crops in the field.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Veg. G. 105: Vegetable Forcing—A course which treats of the principles and practice of forcing vegetables in greenhouses. All of the vegetables that are used for forcing are considered, including methods of starting the plants, systems of companion and successive croppings and their grading, packing and marketing. Each student is allotted a definite area and is required to plan, plant and manage it. Prereq. V. G. 101.

Lecture, 1 hour; practice, 6 hours; 1st and 2d terms. Credit 9.

Veg. G. 106: Vegetable Forcing—Students who desire to complete the entire forcing year in the greenhouses may elect this course. The work will include the planning, planting and managing the spring crops which are planted in the greenhouses. Prereq. V. G. 105.

Veg. G. 107: Frame Crops—The forcing of vegetables to maturity in hotbeds and cold frames, soil management, composting and sterilizing, use of permanent frames heated with manure, hot water and steam, the use of temporary frames for earlier planting of vegetables that will be cultivated as field crops. Prereq. V. G. 101.

Lecture, 1 hour; practice, 6 hours; 3d term. Credit 3.

Veg. G. 108: Home Vegetable Gardening—The production of vegetables for home use; the location, planning, fertilizing and management of the garden. The varieties to select, study of vegetable seeds, germination tests, growing early plants in hotbeds and cold frames and their care until they are planted outside in the "Farmers' Garden." Seed sowing, cultivation, harvesting and storing.

Lecture, 1 hour; practice, 3 hours; 2d and 3d terms. Credit 6.

Veg. G. 109: Vegetable Gardening for Teachers—A course designed to give methods in teaching vegetable gardening. Planning projects to meet different conditions. Equipment, study of seeds, germination tests, seed sowing, transplanting, potting, management of frames, use and care of tools in outside planting and cultivation. Selection of varieties, harvesting and storing.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Veg. G. 110: Vegetable Growing for Canning—A course dealing with the principal vegetables grown for commercial canning; cultural directions for these crops and the home canning of surplus products. Practical work in canning small amounts of vegetables in tin cans and glass jars. Prereq. V. G. 101.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Veg. G. 111: Systematic Olericulture—This course includes a systematic and descriptive study of the leading varieties of the most important vegetables, their origin and botany; adaptation of the various varieties to the different cultural and market conditions; judging and exhibition work. Prereq. Veg. G. 102-103.

Lecture, 1 hour; practice, 6 hours; 1st term. Credit 3.

Veg. G. 112: Advanced Vegetable Gardening—Advanced students who are preparing for some special line of work may elect this course for the

purpose of studying the special problems concerned. This course may be elected any term up to four credits. Improving crop yields, seed selection soil fertility problems, labor, marketing problems, business systems experimental work and other subjects may be considered. All of the facilities of the department are available for students in this course Prereq. Veg. G. 103-111.

Lectures, 2 hours; practice 6 hours; the year. Credit 12.

Veg. G. 113: Horticultural Seminar—Weekly meeting of faculty and senior students in vegetable gardening. Each one will present a paper on some horticultural subject, which will be followed by a general discussion. Attendance of juniors permitted and desired. Required, 2d term, 1 theoretical period per week.

Lecture, 1 hour; 1st and 3d terms. Credit 2.

Veg. G. 114: Research—Advanced students may elect this course for the purpose of studying some special subject on vegetable gardening or experiments with vegetables. The results are written in the form of a report to be filed in the department. Each student's work is arranged individually. All of the facilities of the department are available to such student. A student may elect any available subject desired in case the problem does not require all of the time.

Practice, 6 hours; the year. Credit 6.

GRADUATE SUBJECTS

Veg. G. 201: Advanced Vegetable Gardening—Lectures and practical work on the most important phases of gardening.

Lectures, 2 hours; practice, 3 hours. Credit 3.

Veg. G. 202: Research in Vegetable Gardening—Original investigation of problems in vegetable gardening as soils, culture, breeding, etc.

Practice, 12 hours; the year. Credit 12.

Veg. G. 1: Home Vegetable Gardening—The general principles of vegetable gardening as applied to the growing of vegetables for home use. The laboratory work includes a study of vegetable seeds, seed testing, seed sowing, transplanting and the care of plants in the greenhouses and cold frames. The students are required to plan, plant and manage a large home garden until the end of the term.

Lecture, 1 hour; practice, 3 hours; 2d term. Lectures, 2 hours; practice, 3 hours; 3d term.

Veg. G. 2: Commercial Vegetable Gardening—A study of the principles of vegetable gardening as applied to the growing of vegetables for market and for canning. The course includes the construction and management of hotbeds and cold frames, growing early vegetable plants, soil preparation, sowing and planting, cultivation, harvesting, grading, packing, marketing, canning and storage. Each student is allotted a definite area and is required to plan, plant and manage it.

Lecture, 1 hour; practice, 3 hours; 1st term. Lectures, 2 hours; practice, 3 hours; 3d term.

Veg. G. 3: Vegetable Forcing—A course which deals with the principles and practice of forcing vegetables in greenhouses, hotbeds and cold frames. The most important forcing crops are considered. Each student is assigned a definite plot in the greenhouses and frames and is required to plan, plant and manage it. Second year.

Lecture, 1 hour; practcie, 3 hours; 1st and 2d terms.

Veg. G. 4: Vegetable Growing for the Canning Industry—A course dealing with the principal vegetables grown for commercial canning, cultural directions for these crops and the home canning of surplus products. Practical work will consist in canning small amounts of vegetables in tin cans and glass jars. Second year.

Lectures, 2 hours; practice, 3 hours; 1st term.

Veg. G. 5: Advanced Vegetable Gardening—Students who elect to spend the entire time scheduled for horticulture in vegetable gardening will be given a course which includes the subjects considered under Courses 2 and 3, but the problems arising in the different phases of commercial vegetable growing will be treated in a more thorough manner. It also includes a systematic study of some of the more important commercial varieties. Trips will be taken to markets and vegetable farms.

Lectures, 3 hours; practice, 6 hours; 1st and 3d terms. Lectures, 2 hours; practice, 3 hours; 2d term.

POMOLOGY

Introduction—The course in Pomology is planned to meet the needs of students who want to take up practical Pomology or teach or carry on investigational work. The theoretical instruction is supplemented by excursions to field and orchards for practical work.

COURSES OFFERED

Pom. 101: Principles of Pomology—This is an introductory course which deals with the principles of fruit growing and covers the methods of propagation, planting and pruning.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

Pom. 102: Commercial Pomology—In this course the harvesting, grading, packing, storing and marketing of fruits are taken up. The preparation of orchard by-products, such as cider and vinegar, making dried, canned and preserved fruits are considered. The department is equipped with a cider mill and canning and drying outfits, and students will be given practical exercises in the preparation of these products. Prereq. Pom. 101.

Lecture, 1 hour; practice, 3 hours; 1st term. Credit 2.

Pom. 103: Fruit Judging—In this course the student is given practical exercises in judging fruit, identifying fruits and in selecting fruits for exhibition purposes. The standards and principles governing the judging of fruits are applied.

Practice, 3 hours; 1st and 2d terms. Credit 2.

Pom. 104: Practical Pomology—Managing commercial orchards; a study of orchard sites, soils, planting plans, cultivation, cover crops, companion crops, fertilizers, pruning and spraying as practical in commercial orchards. Prereq. Pom. 101.

Lectures, 2 hours; practice, 3 hours; 2d term. Practice, 6 hours; 3d term. Credit 5.

Pom. 105: Small Fruit Culture—Cultural methods for the production of strawberries, grapes and bunch fruits for market and for the home.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Pom. 106: Nut Culture and Citrus and Sub-tropical Fruits—This course is designed to cover these subjects in a general way. Prereq. Pom. 101.

Lectures, 2 hours; 2d term. Credit 2.

Pom. 107: Systematic Pomology—This course embraces a study of the evolution and relation of pomological plants. It includes exercises in describing and identifying the leading commercial varieties.

Practice, 6 hours; 1st and 3d terms. Credit 4.

Pom. 108: Advanced Pomology—Special problems in adaptation, propagation, cultivation, pruning, harvesting and marketing as they arise in commercial orchards and nurseries will be discussed. The origin and development of the various fruit-producing sections and industries will also be considered and a study made of the men interested and the methods which they use. In this course it may be necessary at times for the student to visit orchards in other sections of the State. Prereq. Pom. 105.

Practice, 6 hours; 1st and 3d terms. Credit 4.

Pom. 109: Origin, Improvement and Breeding of Fruits—The discussion of the methods in plant improvement are accompanied by practice in the orchard, greenhouse and garden. Prereq. Bot. 110.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Pom. 110: Research and Thesis—The work will be arranged with each student individually. He may select some topic or problem in which he may be specially interested and which will require some independent investigation. The results to be presented in the form of a thesis.

Practice, 6 hours; the year. Credit 6.

FOR GRADUATES ONLY

Research—Special problems in Pomology. Work may be based upon compilation and analysis of available date or upon new data acquired by research or experiment. Credits and hours to be arranged.

Pom 1: Elementary Pomology—An introductory course dealing with the principles of the subject. It is intended for all students in the two-year course and it is prerequisite to the later courses. First year.

Lectures, 2 hours; practice, 3 hours; 1st term.

Pom. 2: Practical Fruit Growing—This course is designed for those students who desire to devote all their allotted time in horticulture to pomology. The entire field will be covered and the subjects treated in all the other courses in pomology will be included herein so far as the allotted time and the capacity of the student will permit.

Lectures, 3 hours; practice, 6 hours; 1st and 2d terms. Lectures, 2 hours; practice, 3 hours; 3d term.

Pom. 3: Commercial Pomology—In this course the methods of gathering, packing and marketing of the various fruits are taken up. Market problems, transportation and shipping associations receive special attention. Advantage is taken of the materials available at this time to study the classification and identification of the leading commercial varieties of apples. The student is also given practical exercises in fruit judging and the selection of fruits for exhibition purposes.

Lectures, 2 hours; practice, 3 hours; 1st term.

Pom. 4: Practical Fruit Growing—This course is a continuation of course Pom. 1 and deals with orchard sites, soils, varieties, companion crops, fertilizers and pruning as practiced in both commercial and home orchards.

Lecture, 1 hour; practice, 3 hours; 2d term.

Pom. 5: Small Fruits—In this course the production of strawberries, bush fruits and grapes is considered. The methods of propagation, selection of sites, soils, pruning, training and cultivation are discussed. Second year.

Lectures, 2 hours; practice, 3 hours; 3d term.

LANDSCAPE GARDENING AND FLORICULTURE

L. & F. 101: Principles of Landscape Gardening—A study of types, methods and principles underlying Landscape Gardening.

Lectures, 3 hours; practice, 3 hours; 2d term. Credit 4.

L. & F. 102: Plant Materials—A study in field and laboratory of trees, shrubs and herbaceous plants. Plants are studied in respect to their values, characters, habits, soil requirements and arrangement and planting design. Prereq. Bot. 112.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

L. & F. 103: Landscape Design—The composition of gardens, private estates and related problems. This study involves the topographical survey, drainage and grading plans. Prereq. engineering, —; drawing, —, and surveying, —.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

L. & F. 104: Landscape Design—Continuation of L. & F. 103, including more complex problems and a study of public parks and playgrounds. Attention is given to planting plans and designs. Prereq. L. & F. 103-a.

Lectures, 2 hours; practice, 3 hours; 2d term. Credit 3.

L. & F. 105: Landscape Practice—Grading plans, construction, drawing, estimates, specifications and contracts. Prereq.

Lecture, 1 hour; practice, 6 hours; 3d term. Credit 3.

L. & F. 106: Civic Art—A general study of the methods of city planning and their application to village and rural improvement.

Lecture, 1 hour; practice, 3 hours; 1st term. Credit 2.

L. & F. 107: History of Landscape Gardening—A reference course dealing with the literature and different stages of the development of the art.

Practice, 3 hours; 2d term. Credit 1.

L. & F. 108: Floriculture: Greenhouse Management—Preparation of soils, potting, watering, ventilating and fumigating as applied to greenhouse crops.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

L. & F. 109: Commercial Floriculture—Greenhouse plants and flowers, their culture and methods of handling and marketing for wholesale and retail markets. Trips are taken to leading growers in this section of the country.

Lectures, 2 hours; practice, 3 hours; 2d term. Credit 3.

L. & F. 110: Commercial Floriculture—Continuation of course 109.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

L. & F. 111: Greenhouse Construction—A study of types of forcing structures, their location, arrangement and construction, cost, methods of heating and ventilation. The work includes drawing plans, specifications and practical working construction. Prereq. drawing, —.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

L. & F. 112: Floral Decoration—A study of plants and cut flowers and their arrangement in baskets, designs, bouquets, table and house decoration.

Practice, 3 hours; 2d term. Credit 1.

L. & F. 113: Garden Flowers—The growing of annuals, bulbous plants, and herbaceous perennials for home gardens and for cut flowers and ornamental planting.

Lecture, 2 hours; practice, 3 hours; 3d term. Credit 3.

L. & F. 114: Amateur Floriculture—Plants and flowers for window and home gardens; soils, fertilizers, containers, and potting and shifting of plants.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

L. & F. 115: Tree Repair—Methods of treating trees and shrubs to control attacks of insects and fungous enemies and the repair of injuries done by these enemies. Some attention is given to the technical details

of pruning, placing, treatment of wounds and cavity filling. Prereq. Plant Pathology——, Entomology——.

Lectures, 1 hour; practice, 6 hours; 1st term. Credit 3.

L. & F. 116: **Thesis**—A typewritten report upon some subject or problem in landscape gardening.

Practice, 3 hours; the year. Credit 3.

L. & F. 1: **Plant Propagation**—A study of the propagation of the plant by means of seedage, layering, cuttings, buds and grafts. Special attention is given to ornamental planting for home decoration.

Lecture, 1 hour; practice, 2 hours; 2d term.

L. & F. 2: **Floriculture**—A study of the various phases of greenhouse management, including preparation of soils, watering, potting and ventilating. Elective.

Lecture, 2 hours; practice, 3 hours; 1st term.

L. & F. 3: **Principles of Landscape Gardening**—A study of the various styles of landscape gardening and the principles which underlie them. Special application is made to the ornamentation of the home grounds. Elective.

Lecture, 2 hours; practice, 3 hours; 1st term.

L. & F. 4: **Commercial Floral Crops**—Methods of growing and marketing plants and cut flowers for wholesale and retail markets.

Lecture, 1 hour; practice, 2 hours; 2d term.

Lecture, 2 hours; practice, 2 hours; 3d term.

FORESTRY

Introduction—Instruction in Forestry is planned to give the student who is fitting himself to take up practical problems in farm management a sufficient knowledge of the principles of Forestry to enable him to apply to the wood lot or timber tract the same degree of intelligent direction which he has prepared to give to the tilled lands. At the present time Forestry is not offered as a major course, but is used to supplement the content of the other courses.

101: **Farm Forestry**—A study of forest botany, wood management, measurements, fire protection, nursery practice, tree planting, valuation and utilization of forest crops. The work is conducted by means of lectures and field work. It may be elected by any student having the necessary prerequisites. Prerequisites Botany, 101-2-3.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

1: **Farm Forestry**—The content of this course is similar to that of 101, but is adapted to the development and needs of students in the two-year agricultural course.

Lectures, 2 hours; practice, 3 hours; 3d term.

ECONOMIC BOTANY

Introduction—The purpose of the department is to supply students in Agriculture and General Science with such information as is thought fundamental to their special subjects, and to train students specializing in the department in the different phases of Botany. This training includes such knowledge of plants as would fit one for various positions; such as teachers in high schools, normal schools, colleges and investigators in Experiment Stations and Government service.

Bot. 101: General Botany—A general introduction to Botany. It touches briefly on all the phases of Botany and is prerequisite to all other subjects offered in the department.

Lectures, 2 hours; practice, 6 hours; 3d term. Credit 4.

Bot. 102: Plant Histology—An anatomical study of leaves, stems, roots, flowers and fruits. Where possible plants of economic value are used as type specimens. Prereq. Bot. 101.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Bot. 103: Plant Physiology—A summary view of the physiological processes and behavior of seed plants. The plant is studied in relation to soil, water requirements and other physical processes. Prereq. Bot. 101.

Lectures, 2 hours; practice, 6 hours; 2d term. Credit 4.

Bot. 104: Plant Physiology—Continuation of 103-b; devoted to the study of metabolism, growth and movement. This term is devoted to the study of photosynthesis, synthesis of fat and proteins, respiration, fermentation, digestion, growth and movement. Prereq. Bot. 101.

Lectures, 2 hours; practice, 6 hours; 3d term. Credit 4.

Bot. 105: General Plant Pathology—An introductory study of the disease of plants. Especial attention is given symptoms and to microscopic study of the parasites causing diseases. As far as possible choice of material includes representatives of the principal orders of parasitic fungi. Prereq. Bot. 101.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Bot. 106: Methods in Pathology—A study of methods of sterilization, preparation of culture media, and cultural methods as applied to different groups of parasitic organisms. Some work is done in killing and fixing material, staining and mounting, inoculation and determination of species. Prereq. Path. 105.

Lectures, 2 hours; practice, 3 hours; 2d term. Credit 3.

Bot. 107: Diseases of Horticultural Plants—A detailed study of diseases of fruits, vegetables and other horticultural plants. Especial attention

is given to causes, symptoms, effects and methods of control. Prereq. Path. 105.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 2.

Bot. 108: Diseases of Cereal and Forage Crops—A detailed study of selected types of diseases of cereal and forage crops. The study is from the point of view of distribution, economic importance, symptoms, and effects, causes and methods of control. Prereq. Path. 105.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

Bot. 110: Genetics—A study of heredity. A review is given of the phenomena of evolution and a study made of variation, hybridisation and experimental data. This subject of genetics is fundamental to any advanced study of breeding. Prereq. Bot. 101.

Lectures, 3 hours; 2d term. Credit 3.

Bot. 111: Plant Ecology—A study of plants in relation to their environments. Plant formations and successions in various parts of the country are briefly treated. Much of the work, especially the practical, must be carried on in the field, and for this purpose type regions adjacent to the college are selected. It is generally necessary to take three or four trips at some distance from the college, in which case Saturdays are used for that purpose. Prereq. Bot. 101.

Lecture, 1 hour; practice, 6 hours; 3d term. Credit 3.

Bot. 112: Systematic Botany—A study of the local flora. A study is made of floral parts and the essential relations between the groups of flowering plants. Students become familiar with the systematic key used to identify plants. Prereq. Bot. 101.

Lecture, 1 hour; practice, 6 hours; 3d term. Credit 3.

Bot. 113: Plant Morphology—A course designed to give the student a comprehensive view of the Plant Kingdom. It treats of the general morphological evolutionary development and relationships of the various groups of plants, based upon the examination of selected types from each group. Prereq. Bot. 103.

Lecture, 1 hour; practice, 6 hours; 2d term. Credit 3.

Bot. 114: Methods in Plant Histology—Primarily a study in technique. It includes methods of killing, fixing, imbedding, sectioning, staining and mounting on slides of plant materials. Prereq. Bot. 101.

Practice, 6 hours; 1st term. Credit 2.

Bot. 115: Seminar in Botany—Conferences and reports on Botanical literature, special problems and research. Prereq. Bot. 103.

Lecture and special topics, 1 hour. Credit 1.

Bot. 116: Plant Micro-Chemistry—Michro-technical methods applied to the identification of organic and inorganic substances found in the plant tissues. Prereq. Bot. 103.

Lecture, 1 hour; practice, 6 hours; 2d term. Credit 3.

Bot. 117: Research and Thesis—Original investigation of some project, the results of which are written up in thesis form. This subject is

offered for advanced students of Botany. Hours are arranged to fit individual cases.

Practice, 9 hours; the year. Credit 9.

GRADUATE SUBJECTS

Bot. 201: Advanced Plant Physiology—A detailed study of physiological processes where special problems are discussed from all points of view. Lectures and laboratories to fit the individual cases.

Lectures, 2 hours; practice, 6 hours; the year. Credit 12.

Bot. 202: Research in Plant Physiology—Original investigation of projects relative to physiology of plants.

Practice, 12 hours; the year. Credit 4.

Bot. 203: Plant Pathology—An advanced study of causal agents, symptoms, diagnosis and treatment of diseases.

Lectures, 2 hours; practice, 6 hours; the year. Credit 4.

Bot. 204: Research in Plant Pathology—Original investigation of special problems.

Practice, 12 hours; the year. Credit 4.

Bot. 205: Special Morphology—A study of the four great groups of plants as related to their Morphological development.

Lecture, 1 hour; practice, 6 hours; the year. Credit 3.

Bot. 206: Research in Morphology—Original investigation of some problem relating to structural development.

Practice, 12 hours; the year. Credit 4.

Bot. 1: General Botany—A survey of the field of Botany. Effort is made to give the student an understanding of how plants take up water and nutrients from the soil, how they manufacture foods, and the structures necessary to carry on these processes.

Lectures, 2 hours; practice, 2 hours; 1st term.

Bot. 2: Plant Diseases—A practical study of diseases of plants to enable the student to recognize them in the field. A course in sprays and spraying is given in co-operation with the Zoology Department in which the student is taught methods of disease control.

Lectures, 2 hours; practice, 2 hours; 1st term.

ECONOMIC ZOOLOGY

Introduction—The department aims to give a broad training in general Zoology and, at present, to prepare specialists only in entomology. There are special advantages for students in entomology, since the State and Station work is conducted through this department.

The course fully meets the requirements outlined for entrance by the leading medical colleges.

New courses have been outlined and will be offered in the near future; for specialization in apiculture, parasitology and agriculture; and in evolution and zoological theory, social life of insects, ecology and animal behavior.

Zoo. 101: General Zoology—The relationships of animals, their general form and structure, their responses to environing conditions and their development and evolution are discussed in a broad manner. One example of each branch of the animal kingdom is studied in the laboratories.

Lectures, 2 hours; practice, 6 hours; 1st and 2d terms. Credit 8.

Zoo. 102: Histology and Embryology—A study of the normal tissues, chiefly of the mammals, covers the ground usually assigned to general Histology. The course in Embryology is based on the chick and pig. Prereq. Zoo. 101.

Lectures, 2 hours; practice, 6 hours; the year. Credit 12.

Zoo. 103: Entomology—General principles of structural, systematic and economic Entomology. Lectures, recitations, laboratory work and field excursions. A collection of representative economic insects is required, together with a general collection properly arranged to orders. Prereq. Zoo. 101.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Zoo. 104: Insecticides and Their Application—The principles of insecticides, their chemistry, preparation and application, including construction, care and use of spray and dusting machinery, fumigation and mechanical controls.

Lectures, 1 hour; practice, 3 hours; 2d term. Credit 2.

Zoo. 105: Parasitology—A course offered especially far animal husbandry men to include lectures and laboratory work on the principal ectozoic and entozoic parasites of domestic animals. Prereq. Zoo. 101.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Zoo. 106: Economic Entomology—Morphology of type of insects to acquaint the student with special structures bearing on insect control, insect biology, including methods. The theory and practice of insect control. Prereq. Zoo. 103.

Lectures, 2 hours; practice, 6 hours; the year. Credit 12.

Zoo. 107: Economic Entomology—Problems in Economic Entomology, including life history, ecology, distribution, parasitism and control. Prereq. Zoo. 106.

Lectures, 3 hours; practice, 6 hours; the year. Credit 15.

Zoo. 108: Systematic Entomology—A fundamental study of the morphology of various types of insects and a consideration of the characters of the various orders, their division into tribes, families, etc. Prereq. Zoo. 103.

Lectures, 2 hours; practice, 6 hours; the year. Credit 12.

Zoo. 109: Advanced Systematic Entomology—The student selects some group in which he is particularly interested and makes a detailed study of it. The course requires considerable field work and is supplemented by laboratory periods and frequent conferences. Prereq. Zoo. 108.

Practice, 6 hours; 1st term. Credit 2.

Zoo. 110: Scientific Delineation and Preparations—Photography, photomicrography, drawing freehand and with camera lucida, lantern-slides making, optical projection, preparation of exhibit and museum material.

Practice, 3 hours; 1st and 2d terms. Credit 2.

Zoo. 111: Horticultural Entomology—Lectures, laboratory and field work on the morphology, biology and control of insect pests of horticultural crops. Prereq. 104.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

GRADUATE STUDIES

Zoo. 201: Investigations in Entomology—Studies of minor problems in morphology, taxonomy and applied entomology under the direction of a member of the staff, with particular reference to preparation for individual research.

Credit according to work done.

Zoo. 202: Research in Entomology—Advanced students having sufficient preparation may, with the approval of the head of the department, undertake individual research in morphology, taxonomy or biology and control of insects. Frequently the student may be allowed to work on Station or State Horticultural Department projects. The students' work may form a part of the final report on the project and be published in bulletin form.

Credit according to work done.

Zoo. 203: Advanced Economic Entomology—Lectures discussing the latest theories and practices in applied Entomology.

Lectures, 2 hours; 2d term. Credit 2.

Zoo. 1: Animal Pests—A study of crop and Animal Pests with practice in identification; designed to enable the farmer to recognize and intelligently combat them.

Lectures, 2 hours; practice, 2 hours; 2d term.

Zoo. 2: Sprays and Spraying—Preparation and application of insecticides, together with a consideration of other methods of control.

Lectures, 2 hours; practice, 2 hours; 3d term.

Zoo. 3: Beekeeping—Consideration of the underlying principles of successful Beekeeping with practice in preparation of equipment and the manipulation of bees.

Practice, 3 hours; 3d term.

EQUIPMENT AND FACILITIES FOR INSTRUCTION

The nearness of the College to Washington and the United States Department of Agriculture and the Congressional Library gives it advantages that the other agricultural colleges lack.

Instructors of the Division of Plant Industry frequently take their classes to the Government farm at Arlington and other places of interest in and about the United States Department.

Graduate students are permitted, where satisfactory arrangement can be made, to do their investigational work in the United States Department under the supervision of the proper College authorities.

The departments of Agronomy, Soils and Botany have quarters in the new Agricultural Building, which is to be equipped with the most modern classroom and laboratory facilities.

The Department of Agronomy recently installed modern apparatus for grading and testing grains, and students wishing to equip themselves for this new line of work will have an opportunity to do so.

The Department of Botany is prepared to give undergraduate and graduate instruction in all phases of the subject. Special emphasis is placed upon plant physiology and diseases of economic plants.

The Department of Zoology has its laboratories well supplied with collections of insects, models, microscopes and other supplies necessary for practical work in zoology and entomology. A greenhouse with an aquarium and a screen insectary adjacent to the laboratories are used for class and investigational work. Since the State and Experiment Station entomological work is conducted through the College department, it has special advantages for students in applied entomology.

All departments of the division have greenhouses for experimental and demonstration purposes. The Horticultural Department has at its disposal 10 greenhouses that are 50 feet by 20 feet and of the latest model. Adjacent to these is a 10-acre patch of land for orchards and gardens. The laboratories are

equipped with tools necessary for practical work. With these facilities the department offers instruction to students desiring to specialize in any phase of pomology, vegetable gardening, landscape gardening or floriculture.

The Experiment Station, being on the same campus with the College, offers a field of observation in farm practice, experimental plots, greenhouses and orchards for students interested in plant industry.

An exhibit of field crops and horticultural products will be held every autumn. All students bringing material from their home farms are permitted to exhibit it for prizes.

Division of Animal Industry

OFFICERS OF INSTRUCTION

R. C. REED.....Dean of Division of Animal Industry and Profesor of Animal Pathology.

W. T. L. TALIAFERRO....Professor of Farm Management and Director of Short Winter Courses.

R. H. RUFFNER.....Professor of Animal Husbandry.

J. A. GAMBLE.....Professor of Dairy Husbandry.

A. R. WARD.....Professor of Bacteriology and Pathologist of the Biological Laboratory.

INTRODUCTION

The object of the work in Animal Husbandry is to give instruction in all lines of work which pertain to the judging, breeding, selecting, development and improving the various breeds, types and classes of domesticated animals. The course in Animal Husbandry is offered to students who wish to become proficient in those branches of animal or dairy husbandry which relate to the breeding of pure-bred and high-grade stock. Attention is given to the production, handling, marketing and manufacturing of high-class dairy products. The students are always given such instruction as to enable them: (1) To secure positions in the various lines of work which demand young men well trained in animal husbandry and dairying; (2) to conduct their own farming operations with pleasure and profit.

OUTLINE OF COURSES OFFERED

The required and elective work of the various departments of the division is outlined on the following pages. The College reserves the right to withdraw any course at any time:

ANIMAL HUSBANDRY

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
English 101—Composition and Rhetoric	3(1)	3(1)	3(1)
Public Speaking 101	(2)	(2)	(2)
Zoology 101—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6)
Chemistry 101—General Chemistry	3(3)	3(3)	3(3)
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Freshman Lectures	1	1	1
Industrial History, or Mathematics, or Language	4	4	4
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Animal Husbandry 101—General Animal Husbandry	3(3)		
Animal Husbandry 102—Live Stock Management		2(3)	
Animal Husbandry 103—Principles of Breeding			2(3)
Chemistry 102—Qualitative Analysis	1(6)		
Chemistry 103—Quantitative Analysis		1(6)	1(6)
Agronomy 101—Cereal Crops	3(3)		
Soils 101—Introductory Study		3(3)	
Geology 102—General Geology			4
Botany 102—Plant Histology	2(3)		
Botany 103—Elementary Plant Physiology		2(6)	
Botany 104—Elementary Plant Physiology			2(6)
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
Elective	3	3	3
JUNIOR YEAR.			
Animal Husbandry 104—Animal Nutrition		3(3)	
Animal Husbandry 105—Stock Judging			1(3)
Animal Husbandry 111—Anatomy and Phsyiology	3		
Bacteriology 101—General Bacteriology	1(6)	1(6)	1(6)
Rural Economics 102—Principles of Economics	3	3	
Soils 102—Continuation of 101	2(3)		
Agronomy 103—Forage Crops			3(3)
English 13—Technical Composition	2	2	2
Military Instruction 103—Advanced Course	R	R	R
Elective	3	5	6
SENIOR YEAR.			
Animal Husbandry 106—Advanced Stock Judging	1(3)		
Animal Husbandry 112—Animal Diseases		3(3)	
Animal Husbandry 118—Farm Poultry		3	
Rural Economics 107—Farm Management		3(3)	3(3)
Animal Husbandry 120—Research and Thesis	(6)	(6)	(6)
Military Instruction 104—Advanced Course	R	R	R
Elective	13	4	11
ELECTIVES OFFERED IN ANIMAL HUSBANDRY.			
Animal Husbandry 107—Horse and Mule Production	1(3)		
Animal Husbandry 108—Beef Production		1(3)	
Animal Husbandry 109—Hog Production		1(3)	
Animal Husbandry 110—Sheep Production			1(3)
Animal Husbandry 113—Dairy Management		2(3)	
Animal Husbandry 114—Farm Dairying			1(3)
Animal Husbandry 115—Market Milk		1(3)	
Animal Husbandry 116—Milk Products			1(3)
Animal Husbandry 119—Poultry Practice			(3)
Animal Husbandry 117—Advanced Milk Hygiene	(6)		

DESCRIPTION OF SUBJECTS OFFERED

Following are descriptions of the courses offered by the various departments in the Division of Animal Industry:

ANIMAL HUSBANDRY

A. H. 101: General Animal Husbandry—Types and breeds of live stock. Judging and estimating the weight and age of farm animals. Practical methods of using the score card.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

A. H. 102: Livestock Management—Feeding, housing and general management of farm live stock. Methods of keeping records of production and feeding, testing milk for butter-fat and the organization of testing associations.

Lectures, 2 hours; practice, 3 hours; 2d term. Credit 3.

A. H. 103: Principles of Breeding—A treatment of the principles and practices involved in the improvement of the domestic animals. The course includes the subjects of heredity, selection and development.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

A. H. 104: Animal Nutrition—Principles of nutrition, composition and comparative value of feeding stuffs, balance rations, study of standards and practical problems.

Lectures, 3 hours; practice, 3 hours; 2d term. Credit 4.

A. H. 105: Stock Judging—The course consists of lectures and practice on the animal form and character, giving special attention to market classes of live stock. Illustrations are used to indicate quality, vigor, capacity for profitable production of milk, meat, wool, work and speed.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

A. H. 106: Advanced Stock Judging—A continuation of A. H. 105. The major portion of the work is done by the method of comparative judging, similar to County and State fair work.

Lecture, 1 hour; practice, 3 hours; 1st term. Credit 2.

A. H. 107: Horse and Mule Production—A discussion of the successful practical methods of breeding, handling and training horses and mules. Feeding and care of work horses, fattening horses, carriage and saddle horses, brood mares, foals and stallions. A careful study is made of the cost of raising horses. Prereq. A. H. 101-2-3.

Lecture, 1 hour; practice, 3 hours; 1st term. Credit 2.

A. H. 108: Beef Production—Breeding, feeding, care and management of beef cattle. A study of successful practice in feeding for market and fitting for show. Prereq. A. H. 101-2-3.

Lecture, 1 hour; practice, 3 hours; 2d term. Credit 2.

A. H. 109: Hog Production—Types and breeds of swine, principles of swine breeding, results of experiments in swine feeding and management, marketing and curing, buildings, sanitation and the prevention of diseases. Prereq. A. H. 101-2-3.

Lecture, 1 hour; practice, 3 hours; 2d term. Credit 2.

A. H. 110: Sheep Production—Types and breeds of sheep, principles of sheep breeding, results of experiments in sheep feeding, shelter, rearing for mutton and wool; production of winter or hothouse lambs; care and management of the farm flock. Prereq. A. H. 101-2-3.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

A. H. 111: Anatomy and Physiology—Study of the structure and functions of the animal.

Lectures, 3 hours; 1st term. Credit 3.

A. H. 112: Animal Diseases—Study of diseases of domestic animals with special reference to the recognition of disease conditions, hygiene and sanitation.

Lectures, 3 hours; practice, 3 hours; 2d term. Credit 4.

A. H. 113: Dairy Management—This course is devoted to a study of the care, management and feeding of the dairy herd; selection and care of the herd bull; raising calves and heifers; improvement of the herd through breeding and feeding operations; pedigrees; keeping herd records and the practical applications of methods for the production of clean milk. Prereq. A. H. 101-2-3.

Lectures, 2 hours; practice, 3 hours; 2d term. Credit 3.

A. H. 114: Farm Dairying—Care and handling of milk and cream on the farm, centrifugal separation, pasteurization and testing of milk and milk products.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

A. H. 115: Market Milk—Importance of clean milk to consumer and producer; sources of milk contamination; how to produce clean milk; scoring methods of production; treatment after milking; methods of cooling; transportation of milk; pasteurization of milk and cream; standardization milk and cream; grading of milk and cream; care of milk in the home. Prereq. General Bacteriology.

Lecture, 1 hour; practice, 3 hours; 2d term. Credit 2.

A. H. 116: Milk Products—This course takes up a study of the manufacture of frozen products, neufchatel and cottage cheese, the preparation and marketing of fermented milk drinks; preparation and use of starters; butter making; determination of the total solids in milk and the percentage of fat in ice-cream, evaporated milk and condensed milk by means of the lactometer and the Babcock machine. Prereq. A. H. 101-2-4; General Bacteriology.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

A. H. 117: Advanced Milk Hygiene—Methods and standards for the production and distribution of certified milk. Prereq. General Bacteriology.

Practice, 6 hours; 1st term. Credit 2.

A. H. 118: Farm Poultry—Care of poultry on the general farm; breeds of poultry; selection of stock; principles of poultry-house construction; poultry feeds and feeding; breeding, management of laying and breeding

stock; natural and artificial incubation; keeping of poultry records. Prereq. A. H. 101-2-3.

Lectures, 3 hours; 2d term. Credit 3.

A. H. 119: Poultry Practice—Poultry-house construction; fattening, killing, dressing, marketing poultry; each student taking this course is required to operate an incubator and brooder. Keeping accurate records and submitting detailed reports. Prereq. A. H. 101-2-3-18.

Practice, 3 hours; 3d term. Credit 1.

A. H. 120: Research and Thesis—The lines of work and subjects to be investigated are to be arranged with the head of the department. The object of this work is to develop independence and originality in the student, and also to give him a taste for personal investigation upon lines which are of particular interest to himself. The results of these investigations are usually incorporated in a thesis.

Practice, 6 hours; the year. Credit 6.

A. H. 1: Breeds and Judging of Live Stock—The student begins with the breeds of live stock, making a thorough study of their development and characteristics and also of the pedigrees and performances of superior individuals among horses, cattle, sheep and swine. The practical part of the course is devoted to the judging of horses, dairy cattle, beef cattle, sheep and swine.

Lectures, 2 hours; practice, 2 hours; 1st term.

A. H. 2: Dairying—This course takes up a study of the care and handling of milk and cream on the farm, centrifugal separation, pasteurization and the testing of milk and milk products.

Lectures, 2 hours; practice, 2 hours; 3d term.

A. H. 3: Feeds and Feeding—This course embraces the principles and practice of animal feeding. After covering the principles of feeding it takes up the composition of feeding stuffs, their combinations into properly balanced rations and the relation between the sustenance of animals and their products. Problems relating to balanced rations are solved.

Lectures, 2 hours; practice, 2 hours; 1st term.

A. H. 4: Breeding of Animals—The main object of this course is to direct attention and to stimulate interest in the more tangible physical basis of heredity. A scientific study of the physical aspects of heredity leads to conclusions which fully accord with the teachings of the work of our master breeders. It is the aim to limit discussion to points upon which scientific opinion is quite well agreed.

Lectures, 2 hours; practice, 2 hours; 2d term.

A. H. 5: Animal Diseases—A briefer course in Animal Diseases is offered to the students in the Two-Year Agricultural Course.

Lectures, 2 hours; practice, 2 hours; 2d term.

A. H. 6: Farm Poultry—A general course dealing with poultry-house construction, yarding, fattening, killing, dressing and marketing, and a brief description of the more common breeds. Demonstrations are given in the practices of handling poultry.

Lectures, 2 hours; practice, 3 hours; 3d term.

A. H. 7: **Animal Industry**—A study of the successful methods of operating farms devoted chiefly to livestock production and of the systems to be applied to Maryland conditions. The student may arrange with the head of the department to utilize one-half of scheduled time in other departments. Elective.

Lectures, 2 hours; practice, 4 hours; 1st term. Lectures, 2 hours; practice, 3 hours; 2d term. Lectures, 3 hours; practice, 4 hours; 3d term.

ANIMAL HUSBANDRY

Equipment and Facilities for Instruction

The Division of Animal Husbandry is equipped with a new stock-judging pavilion and modern rooms for the preparation of market milk, milk-testing laboratory, creamery manufactures, offices and classrooms.

Good herds of stock are being established at the Experiment Station, which are of use to the student in his studies. In addition to the supply of stock on the farm, the proximity of the College to Washington and Baltimore makes it possible for the student to get excellent material for study.

It is evident that there is but one way to make a young man a proficient judge of live stock, and that is by training the eye. In all of the lecture and laboratory work outlined in the courses the work is demonstrated with living specimens.

Junior and senior students taking this course are sent to farms throughout the State of Maryland to supervise advanced registry tests for the dairy associations. These trips give the students the advantage of observing the most up-to-date farms in the country, in addition to practical experience. Each year a judging team consisting of three students participates in the students' contest in judging dairy cattle at the National Dairy Show. Students in any of the agricultural courses are eligible to compete for a place on this team. The selection of students for the team is based upon ability and efficiency in this line of work.

Students desiring to specialize in any line of live stock are allowed to do so, and animals are furnished for the special purpose whenever possible. Berkshire, Duroc-Jersey, Tamworth and large Yorkshire breeds of swine are maintained.

Division of Engineering

OFFICERS OF INSTRUCTION

T. H. TALIAFERRO....Dean, Professor of Mathematics and Civil Engineering.
H. GWINNER Professor of Mechanical Engineering and Drawing.
MYRON CREESE.....Professor of Electrical Engineering and Physics.
H. C. BYRD.....Director of Athletics and Chief of Division of Publications.
JOHN PITCHER.....Professor of Military Science and Tactics.
W. A. GRIFFITH.....Physician, Lecturer on Hygiene.
*G. P. SPRINGER.....Associate Professor of Civil Engineering.
J. M. SMITH.....Assistant Professor of Civil Engineering.
L. J. HODGINS.....Assistant Professor of Electrical Engineering and Physics.
J. T. SPANN.....Assistant Professor of Mathematics.
*W. W. SMELKER.....Instructor in Farm Machinery.
C. T. MCCURDY.....Instructor in Mechanical Engineering.

* Leave of absence for war work.

INTRODUCTION

For administrative purposes the engineering group includes, in addition to the departments of Civil, Electrical and Mechanical Engineering, the departments of Mathematics, Physics, Physical Training and Military Science and Tactics.

Courses leading to the degree of Bachelor of Science are offered in Civil, Electrical and Mechanical and Rural Engineering, respectively. An outline of each is found on the succeeding pages. The four-year courses are arranged with a view to preparing the student for immediate usefulness in the technical world. The fundamental principles are emphasized through lectures, recitations and practical exercises in the laboratory, drafting room, shop and field. The courses allow some latitude in the selection of subjects in the senior year, but in the main they are fixed in character, since experience indicates that

the faculty is better qualified to select the subjects to be studied than the average undergraduate. The curriculums include studies which provide a broad general culture as well as a good foundation for technical engineering. Emphasis is placed on the necessity for the development of self-reliance, honest and accurate methods of work, and good judgment in addition to mastering the scientific laws underlying the profession of engineering and applying them.

Instruction

The division is organized, first, to instruct the students who desire to practice engineering as a profession, and, second, to teach students interested in agriculture and applied science, such branches of mechanic arts and engineering as will promote their individual interests. Instruction in certain subjects required under the provision of the Smith-Hughes Act for the training of teachers in the industrial arts will be given. An opportunity is afforded each year for practicing road engineers to take an intensive course in road building and maintenance, and for persons attending the short courses in agriculture to obtain instruction in farm machinery, wood work, the mixing and placing of concrete, etc.

The work in the departments of Mathematics and Physics is developed with a view both to its cultural and its utilitarian value. The utilitarian point of view is probably more emphasized because scientific training is so largely dependent on these subjects, particularly mathematics. Their value, however, in mental training and in general culture is clearly presented to the students.

A general statement regarding military instruction is given elsewhere. An outline of subjects assigned to the Department of Military Science and Tactics, under provisions of the act establishing the Reserve Officers' Training Corps, is placed with those given by the other departments of the division.

At present no courses are offered in the Department of Physical Training. A statement regarding that work will be found elsewhere.

SUMMER WORK AND INSPECTION

In addition to the work given during the regular session, summer work covering 100 hours of field, laboratory, shop or office practice is required of members of the freshman class. This work will be developed to include also a specified amount of time at the close of the sophomore and junior years. Summer employment will be accepted as a substitute for this work, if found to be equivalent.

The proximity of the College to Baltimore and Washington and to other places where there are great industrial enterprises offers an excellent opportunity for engineering students to observe what is being done in their chosen field. An instructor accompanies students on all trips of inspection.

Information and advice is given to farmers and others interested concerning drainage, sanitation, water supply, lighting, farm machinery and other small engineering problems whenever possible, although neither an Experiment Station nor an Extension Department in Engineering has as yet been established.

OUTLINE OF COURSES OFFERED

The normal curriculum of each four-year course is outlined on the following pages. Since the state of war now existing may give rise to conditions which will necessitate a modification of these courses, the right is reserved to change any outline at any time:

CIVIL ENGINEERING

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
Mathematics 101—Trigonometry	5		
Mathematics 102—Analytics		5	5
English 101—Composition and Rhetoric	3(1)	3(1)	3(1)
Public Speaking 101	(2)	(2)	(2)
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Surveying 101 and 102—Plane Surveying		2	(3)
Drawing 101—Freehand Drawing	(3)		
Drawing 103—Mechanical Drawing	(6)	(3)	
Drawing 104—Engineering Drawing		(3)	
Drawing 105—Descriptive Geometry			2(3)
Shop 113—Wood Work	(3)		
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Mathematics 103—Advanced Algebra	3		
Mathematics 104—Calculus	2	5	5
Physics 101 and 104—Mechanics and Sound	4(3)		
Physics 102 and 105—Electricity and Magnetism		4(3)	
Physics 103 and 106—Heat and Light			4(3)
Mineralogy 101—Determinative Mineralogy			1(3)
Surveying 103 and 104—Plane Surveying	2(3)		
Surveying 105 and 106—Advanced Surveying		4	(3)
Mechanics 101—Graphic Statics		2(3)	
Mechanics 102—Analytical Mechanics			3
Drawing 102—Descriptive Geometry	2(6)		
Drawing 108—Drafting			(3)
Military Instructions 102—Basic Course	1(2)	1(2)	1(2)
JUNIOR YEAR.			
English 104—Technical Composition	(2)	(2)	(2)
Public Speaking 104—Technical Public Speaking	(1)	(1)	(1)
Rural Economics 101—Principles of Economics	3	3	
Government 104—Law of Contracts			3
Geology 103—Engineering Geology	3(3)		
Surveying 107—Topographic Surveying	(3)		
Railways 101 and 102—Railway Curves and Earth Work		3	2
Railways 103—Railway Surveying			(6)
Mechanics 103 and 104—Mechanics of Engineering	5	2	2
Mechanics 105—Materials of Construction		2	
Hydraulics 101			3
Drawing 109, 110 and 111—Shades, Shadows and Perspective		1(3)	(3)
Structural Designing 101—Elementary Structural Design		2(3)	2(3)
Electrical Engineering 111—Dynamos and Motors	2		
Electrical Laboratory 102—Electrical Engineering Laboratory	(3)		
Experimental Laboratory 101—Testing		(3)	
Military Instructions 103—Advanced Course	S	S	S

CIVIL ENGINEERING—Concluded

SUBJECT.	TERM.		
SENIOR YEAR.	I	II	III
Mathematics 107—Differential Equations		3†	
Mathematics 108—Estimates of Cost	(3)		
English 105—Technical Composition	(2)	(2)	(2)
Public Speaking 106—Technical Public Speaking	(1)	(1)	(1)
French 104	5*	5*	5*
German 104	5*	5*	5*
Spanish 102	5*	5*	5*
Surveying 108 and 109—Geodesy		3†	(3) †
Railways 104—Railway Economics		2	
Railways 101—Highways			4
Highways 102—Materials Laboratory			(3) †
Hudraulics 102	(3)		
Hydraulics 103—Hydromechanics	3		
Hydraulics 104 and 105—Water Supply		3†	(3) †
Hydraulics 106 and 107—Sewerage			2(3) †
Structural Designing 102—Structural Design	2(3)	2(3)	2(3)
Structural Designing 104 and 105—Concrete Theory and Design	2	2	
Structural Designing 106—Retaining Walls and Concrete Arches		(3)	
Mechanical Engineering 106—Heating and Ventilation			2(3) †
Experimental Laboratory 103—Cement Testing	(3)		
Military Instruction 104—Advanced Course	S	S	S

*Alternative.

†Electives to be selected with the approval of the Dean to supply the necessary credits.

S. Students who volunteer and are selected for this course are required to take 3 hours' training in theory in addition to the 2 hours of practical drill required of all physically fit male students.

MECHANICAL ENGINEERING

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
Mathematics 101—Trigonometry	5		
Mathematics 102—Analytics		5	5
English 101—Composition and Rhetoric	3(1)	3(1)	3(1)
Public Speaking 101	(2)	(2)	(2)
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Drawing 101—Freehand Drawing		(3)	
Drawing 103—Mechanical Drawing	(6)	(3)	
Drawing 105—Descriptive Geometry			2(3)
Mechanical Engineering 101—Technical Instruction	2		
Shop 101—Wood Work	(3)	(6)	(3)
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Mathematics 103—Advanced Algebra	3		
Mathematics 104—Calculus	2	5	5
Physics 101 and 104—Mechanics and Sound	4(3)		
Physics 102 and 105—Electricity and Magnetism		4(3)	
Physics 103 and 106—Heat and Light			4(3)
Mechanics 101—Graphic Statics		2(3)	
Mechanics 102—Analytical Mechanics			3
Drawing 106—Descriptive Geometry	2(6)		
Drawing 108—Drafting			(3)
Mechanical Engineering 102—Steam Engines	3		
Mechanical Engineering 103—Technical Mechanics		2	
Shop 105—Blacksmithing		(6)	
Shop 108—Foundry			(6)
Shop 109—Machine Work			(3)
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
JUNIOR YEAR.			
English 104—Technical Composition	(2)	(2)	(2)
Public Speaking 104—Technical Public Speaking	(1)	(1)	(1)
Rural Economics 101—Principles of Economics	3	3	
Government 104—Law of Contracts			3
Mechanics 103 and 104—Mechanics of Engineering	5	2	2
Mechanics 105—Materials of Construction		2	
Hydraulics 101			3
Electrical Engineering 111 and 112—Dynamos and Motors	2	2	
Electrical Laboratory 102 and 103—Electrical Engineering Laboratory	(3)	(3)	
Machine Design 101—Elementary Machine Design	1(3)		
Machine Design 102 and 103—Machine Design		2(3)	2(3)
Machine Design 104—Kinematics of Machinery			2(3)
Shop 110—Machine Work	(9)	(6)	
Experimental Laboratory 101—Testing		(3)	
Experimental Laboratory 102—Experimental Engineering			(3)
Military Instruction 103—Advanced Course	S	S	S
SENIOR YEAR.			
Mathematics 107—Differential Equations		3	
English 105—Technical Composition	(2)	(2)	(2)
Public Speaking 106—Technical Public Speaking	(1)	(1)	(1)
French 104	5*	5*	5*
German 104	5*	5*	5*
Spanish 102	5*	5*	5*
Hydraulics 103—Hydromechanics	3		
Hydraulics 104—Water Supply		3†	
Structural Design 103	2(6)	2(3)	2(6)
Mechanical Engineering 104 and 105—Heat Engineering	2	3	3
Mechanical Engineering 106—Heating and Ventilation			2(3)
Experimental Laboratory 103—Cement Testing	(3)		
Experimental Laboratory 104—Experimental Engineering	(3)	(6)	(3)
Military Instruction 104—Advanced Course	S	S	S

*Alternative.

†Electives to be selected with the approval of the Dean to supply the necessary credits.

S. Students who volunteer and are selected for this course are required to take 3 hours' training in theory in addition to the 2 hours of practical drill required of all physically fit male students.

ELECTRICAL ENGINEERING

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
Mathematics 101—Trigonometry	5		
Mathematics 102—Analytics		5	5
English 101—Composition and Rhetoric	3(1)	3(1)	3(1)
Public Speaking 101	(2)	(2)	(2)
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Surveying 101 and 102—Plane Surveying		2	(3)
Drawing 101—Freehand Drawing	(3)		
Drawing 103—Mechanical Drawing	(6)	(3)	
Drawing 105—Descriptive Geometry			2(3)
Shop 113—Wood Work	(3)	(3)	
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Mathematics 103—Advanced Algebra	3		
Mathematics 104—Calculus	2	5	5
Physics 101 and 104—Mechanics and Sound	4(3)		
Physics 102 and 105—Electricity and Magnetism		4(3)	
Physics 103 and 106—Heat and Light			4(3)
Mechanics 101—Graphic Statics		2(3)	
Mechanics 102—Analytical Mechanics			3
Drawing 106—Descriptive Geometry	2(6)		
Drawing 108—Drafting			(3)
Electrical Engineering 101—Electricity and Magnetism		2	2
Electrical Laboratory 101—Electrical Engineering Laboratory		(3)	(3)
Mechanical Engineering 102—Steam Engines	3		
Shop 106—Blacksmithing		(3)	
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
JUNIOR YEAR.			
English 104—Technical Composition	(2)	(2)	(2)
Public Speaking 104—Technical Public Speaking	(1)	(1)	(1)
Rural Economics 101—Principles of Economics	3	3	
Government 104—Law of Contracts			3
Mechanics 103—Mechanics of Engineering	5		
Hydraulics 101			3
Electrical Engineering 102—Direct Current Theory	3	3	
Electrical Engineering 103—Dynamos and Alternating Currents			3
Electrical Engineering 108—Wireless Telegraphy		1	
Electrical Engineering 110—Primary and Secondary Batteries		2	
Electrical Design 101—Direct Current Design			2(9)
Electrical Laboratory 104—Electrical Engineering Laboratory	(6)	(3)	(6)
Electrical Laboratory 107—Wireless Laboratory		(3)	
Machine Design 101—Elementary Machine Design	1(3)		
Machine Design 102		2(3)	
Shop 111—Machine Work	(3)	(3)	
Experimental Laboratory 101—Testing		(3)	
Military Instruction 103—Advanced Course	S	S	S

ELECTRICAL ENGINEERING—Concluded

SUBJECT.	TERM.		
SENIOR YEAR.	I	II	III
English 105—Technical Composition	(2)	(2)	(2)
Public Speaking 106—Technical Public Speaking	(1)	(1)	(1)
French 104	5*	5*	5*
German 104	5*	5*	5*
Spanish 102	5*	5*	5*
Hydraulics 103—Hydromechanics	3		
Electrical Engineering 104—Alternating Currents	3	3	3
Electrical Engineering 105—Lighting and Illumination			3
Electrical Engineering 106—Electric Power Plants		3	
Electrical Engineering 107—Telephones and Telegraphs		2	
Electrical Engineering 109—Electric Railways			3
Electrical Design 102—Alternating Current Design	(3)		
Electrical Laboratory	(6)	(6)	(6)
Electrical Laboratory 106—Telephone Laboratory		(3)	
Mechanical Engineering 104—Heat Engineering	2		
Military Instruction 104—Advanced Course	S	S	S

*Alternative.

†Electives to be selected with the approval of the Dean to supply the necessary credits.

S. Students who volunteer and are selected for this course are required to take 3 hours' training in theory in addition to the 2 hours of practical drill required of all physically fit male students.

RURAL ENGINEERING

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
Mathematics 101—Trigonometry	5		
Mathematics 102—Analytics		5	5
English 101—Composition and Rhetoric	3(1)	3(1)	3(1)
Public Speaking 101	(2)	(2)	(2)
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Surveying 101 and 102—Plane Surveying		2	(3)
Drawing 101—Freehand Drawing	(3)		
Drawing 103—Mechanical Drawing	(3)	(3)	
Drawing 104—Engineering Drawing	(3)		
Drawing 105—Descriptive Geometry			2(3)
Shop 102—Wood Work	(3)	(3)	
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Mathematics 103—Advanced Algebra	3		
Mathematics 104—Calculus	2	5	5
Physics 101 and 104—Mechanics and Sound	4(3)		
Physics 102 and 105—Electricity and Magnetism		4(3)	
Physics 103 and 106—Heat and Light			4(3)
Surveying 103 and 104—Plane Surveying	2(3)		
Mechanics 101—Graphic Statics		2(3)	
Mechanics 102—Analytical Mechanics			3
Drawing 106—Descriptive Geometry	2(6)		
Drawing 108—Drafting			3
Electrical Engineering 101—Electricity and Magnetism		2	2
Electrical Laboratory 101—Electrical Engineering Laboratory		(3)	(3)
Shop 106—Blacksmithing		(3)	
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
JUNIOR YEAR.			
English 104—Technical Composition	(2)	(2)	(2)
Public Speaking 104—Technical Public Speaking	(1)	(1)	(1)
Rural Economics 101—Principles of Economics	3	3	
Government 104—Law of Contracts			3
Agronomy 101—Cereal Crops	3(3)		
Soils 101—Introductory Soils		3(3)	
Vegetable Gardening 101—Vegetable Gardening			3(3)
Mechanics 102—Mechanics of Engineering	5		
Hydraulics 101			3
Structural Design 101—Elementary Structural Design		2(3)	2(3)
Electrical Engineering 105—Lighting and Illumination			3
Electrical Laboratory 102—Electrical Engineering Laboratory	(3)		
Machine Design 101—Elementary Machine Design	1(3)		
Mechanical Engineering 107—Farm Machinery		3(3)	
Shop 111—Machine Work	(3)	(3)	
Experimental Laboratory 101—Testing		(3)	
Military Instruction 103—Advanced Course	S	S	S

RURAL ENGINEERING—Concluded

SUBJECT.	TERM.		
SENIOR YEAR.	I	II	III
Mathematics 108—Estimates of Cost	(3)		
English 105—Technical Composition	(2)	(2)	(2)
Public Speaking 106—Technical Public Speaking	(1)	(1)	(1)
French 104	5*	5*	5*
German 104	5*	5*	5*
Spanish 102	5*	5*	5*
Soils 102	2(3)†		
Forestry 101—Farm Forestry			2(3)
Animal Husbandry 101—General Animal Husbandry	3(3)		
Animal Husbandry 114—Farm Dairying			1(3)†
Animal Husbandry 118—Poultry		3†	
Geology 103			3(3)†
Highways 101			4†
Hydraulics 102	(3)		
Hydraulics 103—Hydromechanics	3†		
Hydraulics 104 and 105—Water Supply		3†	(3)†
Hydraulics 106 and 107—Sewerage			2(3)†
Hydraulics 110—Advanced Drainage			1(3)†
Structural Design 103—Concrete Theory	2		
Structural Design 104—Concrete Design		2†	
Structural Design 105—Retaining Walls and Concrete Arches		(3)†	
Structural Design 107—Design of Farm Structures		2(3)†	2(3)†
Structural Design 108—School Architecture			3(3)†
Electrical Engineering 107—Telephones and Telegraphs		2†	
Electrical Engineering 110—Primary and Secondary Batteries		2	
Electrical Laboratory 106—Telephone Laboratory		(3)†	
Machine Design 105—Design of Farm Machinery		2(3)†	2(3)†
Mechanical Engineering 102—Steam Engines	3†		
Mechanical Engineering 106—Heating and Ventilation			2(3)
Military Instruction 104—Advanced Course	S	S	S

*Alternative.

†Electives to be selected with the approval of the Dean to supply the necessary credits.

S. Students who volunteer and are selected for this course are required to take 3 hours' training in theory in addition to the 2 hours of practical drill required of all physically fit male students.

DESCRIPTION OF SUBJECTS OFFERED

The subjects offered in the different departments of the division are divided into groups, each of which is given a title more or less indicative of the subjects included in it. An abbreviation of this title is placed before each subject in the group. This is used with the subject title in the tabulated outline of the curriculum of each course.

DRAWING AND DESCRIPTIVE GEOMETRY

Dr. 101: Freehand Drawing—Elementary practice; lettering, exercises in sketching, both in pencil outline and pencil rendering; line drawing, composition, proportion and comparative measurements; exercises in sketching of technical objects, and pen and ink shading. Plates upon

completion are bound and properly titled. Required of students in engineering.

Practice, 3 hours; 1st or 2d term. Credit 1.

Dr. 102: Mechanical Drawing—Practice in plain lettering, use of instruments, projection and simple working drawings, the plates upon completion being enclosed in covers properly titled by the students. Required of students in mechanical and rural engineering.

Practice, 3 hours; 1st and 2d terms. Credit 2.

Dr. 103: Mechanical Drawing—A course similar to Dr. 102 for students in civil and electrical engineering.

Practice, 6 hours, 1st term; 3 hours, 2d term. Credit 3.

Dr. 104: Engineering Drawing—Conventional signs used in mapping. Scale making, contours, hachures. Profiles and mapping. Required of students in civil and rural engineering.

Practice, 3 hours; 1st or 2d term. Credit 1.

Dr. 105: Descriptive Geometry—Detailing of machinery and drawing to scale from blueprints. Tracing and blueprinting, and representation of flat and round surfaces by ink shading. Its relation to mechanical drawing and the solution of such problems relating to magnitudes in space as bear directly upon those which present themselves to civil, electrical, mechanical and rural engineers. Prerequisites Dr. 102 and Solid Geometry.

Lectures and recitations, 2 hours; practice, 3 hours; 3d term. Credit 3.

Dr. 106: Descriptive Geometry—A continuation of Dr. 105.

Lectures and recitations, 2 hours; practice, 6 hours; 1st term. Credit 3.

Dr. 107: Mechanical Drawing—Practice in plain lettering, use of instruments, geometrical constructions and plans of simple buildings. Elective for non-engineering students.

Practice, 3 hours; 1st term. Credit 1.

Dr. 108: Drafting—In this course problems pertinent to the work of students in each branch of engineering are selected. Drawings are made to scale. Empirical formulas for determining dimensions are used whenever possible. Prereq. Dr. 102 and 103.

Practice, 3 hours; 3d term. Credit 1.

Dr. 109: Shades, Shadows, Perspective—Theory of shadows and perspective of objects, and of shadows in perspective. Prereq. Dr. 106. Must be taken with Dr. 110. Required of students in civil engineering.

Lectures and recitations, 1 hour; 2d term. Credit 1.

Dr. 110: Shades and Shadows—Development and application of Dr. 109 in the drawing room. Prereq. Dr. 106. Must be taken with Dr. 109. Required of students in civil engineering.

Practice, 3 hours; 2d term. Credit 1.

Dr. 111: Perspective—Perspective of point, line and solid. Shadows in perspective. Prereq. Dr. 109 and 110. Required of students in civil engineering.

Practice, 3 hours; 3d term. Credit 1.

Dr. 1: Farm Drawing—A course similar to Dr. 107, for students in t Two-Year Course in Agriculture.

Practice, 3 hours; 1st term.

Dr. 2: Mechanical Drawing—Instruction in commercial drafting. Th is preceded by a study of drafting instruments and freehand letterin Projection applied to shop drafting of machine parts. Tracing and blu printing. The making of detail and assembly drawings. Freehar sketching of machine tools.

Practice, 6 hours; 1st, 2d and 3d terms.

Dr. 3: Freehand Drawing—A course similar to Dr. 101.

Practice, 6 hours; 3d term.

ELECTRICAL ENGINEERING

E. E. 101: Electricity and Magnetism—The elementary theories of ele trical and magnetic phenomena are carefully developed, the course bein correlated with the technical work taken up later. Required of student in electrical and rural engineering. Must be taken with El. Lab. 101.

Lectures and recitations, 2 hours; 2d and 3d terms. Credit 4.

E. E. 102: Direct Current Theory—The study of the principles involve in the construction and operation of direct and alternating curren generators and motors. Also the characteristic curves and efficiencie of the various types of machines, the selection of machines for specifi duties and the proper methods of installing and operating. Require of students in electrical engineering. Must be taken with El. Lab. 104.

Lectures and recitations, 3 hours; 1st and 2d terms. Credit 6.

E. E. 103: Dynamos and Alternating Currents—This is a continuatio of E. E. 102, which covers the characteristics of direct current machin ery. A number of analytical and graphical problems are required t give a clear conception of the effects of inductance and capacity in alternating current circuits. Required of students in electrical engineering. Must be taken with El. Lab. 104.

Lectures and recitations, 3 hours; 3d term. Credit 3.

E. E. 104: Alternating Currents and Alternating Current Machinery— The theory, construction and practical applications of single phase and polyphase alternating current machinery, including generators, synchronous, induction, and repulsion motors, converters, transformers, etc., are taken up in detail. Required of students in electrical engineering. Must be taken with El. Lab. 105.

Lectures and recitations, 3 hours; 1st, 2d and 3d terms. Credit 9.

E. E. 105: Lighting and Illumination—A study of the various systems of distribution used in arc and incandescent lighting. Lectures on the manufacture and characteristics of the many forms of electric lamps; the selection of lamps for commercial work; and the principles of correct interior and exterior illumination. Required of students in electrical and rural engineering.

Lectures and recitations, 3 hours; 3d term. Credit 3.

E. E. 106: Electric Power Plants and Transmission—This course includes the principles governing the installation and operation of power-house and substation machinery and systems. A number of practical problems are given to illustrate the principles. Required of students in electrical engineering.

Lectures and recitations, 3 hours; 2d term. Credit 3.

E. E. 107: Telephones and Telegraphs—The application of electricity to telephones and telegraphs, with a study of the construction and operation of the apparatus required for the magneto, common battery and automatic exchanges. The principles of the operation of simple, duplex, quadruplex and simultaneous telegraph. Required of electrical and elective for rural engineering students. Must be taken with El. Lab. 106.

Lectures and recitations, 2 hours; 2d term. Credit 2.

E. E. 108: Wireless Telegraphy—The principles of the application of electric waves to wireless telephony are followed by a study of the various systems in commercial use. Required of students in electrical engineering. Must be taken with El. Lab. 107.

Lectures and recitations, 1 hour; 2d term. Credit 1.

E. E. 109: Electric Railways—The course includes the consideration of the design and operation of the electric railway systems, power-plants and substations. Many problems are given which involve the engineering features of modern railway development. Required of students in electrical engineering.

Lectures and recitations, 3 hours; 3d term. Cradit 3.

E. E. 110: Primary and Secondary Batteries—A study of the various types of primary batteries and their application to commercial work. The theory, construction and application of lead storage cells and Edison storage batteries. A short outline of the auxiliary apparatus used in connection with storage cells. Required of students in electrical and rural engineering.

Lectures and recitations, 2 hours; 2d term. Credit 2.

E. E. 111: Dynamos and Motors—A general course in direct and alternating currents, covering the principles of construction and operation of machines used in commercial practice. Required of civil and mechanical engineering students. Must be taken with El. Lab. 102.

Lectures and recitations, 2 hours; 1st term. Credit 2.

E. E. 112: Dynamos and Motors—A continuation of E. E. 111. Required of mechanical engineering students. Must be taken with El. Lab. 103.

Lectures and recitations, 2 hours; 2d term. Credit 2.

E. E. 1: Elements of Direct Current Machinery—The study of the fundamental principles involved in the construction and operation of direct current generators and motors. Characteristic curves and the selection of machines for specific purposes. Methods for installing and maintaining various types of generators and motors. The laboratory includes the installation of generators and motors with the necessary auxiliary ap-

paratus, and commercial tests of the various types of direct curren machines.

Recitations, 2 hours; practice, 3 hours; 1st and 2d terms.

E. E. 2: Elements of Direct Current Machinery—A course similar t E. E. 1.

Recitations, 3 hours; practice, 3 hours; 2d term.

E. E. 3: Elements of Alternating Current Machinery—This course includes the study of fundamental principles and the design and construction of alternating machinery. The laboratory work consists of commercial tests of single phase and polyphase machinery, including generators, motors, converters, transformers, etc.

Recitations, 4 hours; practice, 3 hours; 3d term.

E. E. 4: Illumination—Lectures on the manufacture and characteristics of the various forms of arc and incandescent lamps; the selection of lamps and reflectors for commercial work; the principles for correct interior and exterior illumination. The laboratory work includes the determination of the operating characteristics, the measuring of the candle-power of lamps, and the measuremnet of the efficiency of actual lighting installations.

Recitations, 2 hours; practice, 3 hours; 2d term.

E. E. 5: Electric Power Plants and Transmission—The principles governing the installation and operation of power-house and substation machinery, transmission and distribution systems.

Recitations, 2 hours; 2d and 3d terms.

E. E. 6: Telephones and Telegraphs—A study of the construction and operation of the apparatus required for magneto, common battery and automatic exchange. The principles of the operation of simple, duplex and quadruplex telegraphy. The laboratory work includes experiments with the various types of apparatus and the operation of exchanges.

Recitations, 3 hours; practice, 3 hours; 3d term.

E. E. 7: Primary and Secondary Batteries—The study and testing of various types of primary batteries and their application to commercial work. The theory and construction of lead storage cells and Edison storage batteries. Actual testing of batteries in operation.

Recitations, 2 hours; practice, 3 hours; 1st term.

E. E. 8: Electrical Measuring Instruments—The theory governing the design, construction and application of all types of direct and alternating current instruments. The repairing, testing and calibration of the different types of instruments.

Recitations, 2 hours; practice, 3 hours; 1st term.

E. E. 9: Electrical Equipment Repairs—This course includes the rewinding of armature and field coils, testing of commutators, repairs for signal systems, etc.

Recitation, 1 hour; practice, 3 hours; 2d term.

E. E. 10: Switchboards—Lectures on the design and construction of standard switchboards of various types.

Recitations, 2 hours; 3d term.

E. E. 11: Interior Wiring—A thorough study of the Underwriters' Rules concerning all classes of interior wiring. Calculations for circuits and the design of interior light and power systems. The practice includes the installation of residence and commercial light and power systems.

Recitations, 2 hours, 1st and 2d terms; practice, 6 hours, 1st term, 3 hours, 2d term.

E. E. 12: Outside Line Construction—The design and construction of short transmission and distribution systems.

Recitation, 1 hour; practice, 6 hours; 3d term.

ELECTRICAL ENGINEERING DESIGN

E. Des. 101: Direct Current Design—This course covers the design of direct current generators and motors, including the use of the different conducting, magnetic and insulating materials. Required of students in electrical engineering.

Lectures and recitations, 2 hours; practice, 9 hours; 3d term. Credit 5.

E. Des. 102: Alternating Current Design—The complete design of an alternating current generator or a transformer. Required of students in electrical engineering.

Practice, 3 hours; 1st term. Credit 1.

ELECTRICAL ENGINEERING LABORATORY

El. Lab. 101: Electrical Engineering Laboratory—A laboratory course designed to verify the laws and principles outlined in E. E. 101. Required of students in electrical and rural engineering. Must be taken with E. E. 101.

Practice, 3 hours; 2d and 3d terms. Credit 2.

El. Lab. 102: Electrical Engineering Laboratory—This course includes the methods of measuring resistance, current and electromotive force; photometry; and elementary testing of generators and motors. Required of civil and mechanical engineering students. Must be taken with E. E. 111.

Practice, 3 hours; 1st term. Credit 1.

El. Lab. 103: Electrical Engineering Laboratory—A continuation of El. Lab. 102. Required of students in mechanical engineering. Must be taken with E. E. 112.

Practice, 3 hours; 2d term. Credit 1.

El. Lab. 104: Electrical Engineering Laboratory—Study and calibration of instruments. Measurement of resistance, current and electromotive force; commercial tests on generators and motors; arc lamp testing and

photometry. Required of students in electrical engineering. Must be taken with E. E. 102 and 103.

Practice, 6 hours, 1st and 3d terms; 3 hours, 2d term. Credit 5.

El. Lab. 105: Electrical Engineering Laboratory—Measurement of inductance, impedance, condensance, etc.; power measurements in alternating current circuits; regulation and efficiency tests of alternators and transformers; operating characteristics of synchronous and induction motors. Required of students in electrical engineering. Must be taken with E. E. 104.

Practice, 6 hours; 1st, 2d and 3d terms. Credit 6.

El. Lab. 106: Telephone Laboratory—This course covers experimental work with all types of telephone apparatus and the operation of the magneto and common battery exchanges. Required of students in electrical engineering. Must be taken with E. E. 107.

Practice, 3 hours; 2d term. Credit 1.

El. Lab. 107: Wireless Laboratory—At present this course is confined to practice in sending and receiving signals in the Continental Code by means of radio instruction sets. Required of students in electrical engineering. Must be taken with E. E. 108.

Practice, 3 hours; 2d term. Credit 1.

EXPERIMENTAL LABORATORY

Exp. Lab. 101: Testing—Study of testing machines and accessories. Operation of steam engine. Study of planimeter and indicator. Test of gas engines. Tension test of wrought iron and steel. Transverse tests of cast iron and timber. Compression tests of long and short wood and concrete columns. Prereq. Mec. 103. Required of all engineering students.

Practice, 3 hours; 2d term. Credit 1.

Exp. Lab. 102: Experimental Engineering—Determining the amount of moisture in steam; the efficiency of the injector; the transit and its uses; indicator practice; slide valve setting; the slide rule and micrometer; the analysis of boiler feed water; flue gases; lubricating oils; and the determination of the heating value of fuels and moisture in steam. Required of students in mechanical engineering.

Practice, 3 hours; 3d term. Credit 1.

Exp. Lab. 103: Cement Testing—Standard tests of cement and concrete mortars. Time of setting. Tension and compression tests. Required of students in civil and mechanical engineering.

Practice, 3 hours; 1st term. Credit 1.

Exp. Lab. 104: Experimental Engineering—A continuation of Exp. Lab. 102. Required of students in mechanical engineering.

Practice, 3 hours, 1st and 3d terms; 6 hours, 2d term. Credit 4.

Exp. Lab. 1: Experimental Laboratory—Tests of steam, gas and oil engines. Determining the strength of iron and steel. The efficiency of pumps and injectors. Tests of heating values of fuels.

Practice, 3 hours; 3d term.

HIGHWAY ENGINEERING

Hwys. 101: Highways—Theory of location, construction and maintenance of country roads and city streets and pavements. Prereq. Surv. 105. Required for civil and elective for rural engineering students.

Lectures and recitations, 4 hours; 3d term. Credit 4.

Hwys. 102: Materials Laboratory—Tests of oils, asphalts, tars and road binders. Prereq. Chem. 103. Elective for students in civil engineering.

Practice, 3 hours; 3d term. Credit 1.

HYDRAULIC AND SANITARY ENGINEERING

Hyd. 101: Hydraulics—Principles of Hydraulics. Flow in open channels and pipes and through orifices. Methods of measurement, stream gauging, etc. Prereq. Mech. 102. Required of all students in engineering.

Lectures and recitations, 3 hours; 3d term. Credit 3.

Hyd. 102: Hydraulics—Determination of the co-efficients of discharge, velocity and contraction in pipes, orifices and weirs. Stream gauging methods. Flow measurements. Prereq. Hyd. 101. Required of students in civil and rural engineering.

Practice, 3 hours; 1st term. Credit 1.

Hyd. 103: Hydromechanics—Pumps, pumping machinery, water wheels and turbines. Friction losses in plants and water systems. Study of distribution systems. Prereq. Hyd. 101. Require of students in civil, electrical and mechanical engineering. Elective for rural engineering students.

Lectures and recitations, 3 hours; 1st term. Credit 3.

Hyd. 104: Water Supply—Principles of water supply engineering. Quantity of water required for municipal systems. Fire systems. Flow from drainage areas. Conduits and distribution systems. Quality of water and methods of purification. Prereq. Hyd. 101. Elective for students in civil, mechanical and rural engineering.

Lectures and recitations, 3 hours; 2d term. Credit 3.

Hyd. 105: Water Supply—Design of distribution system for small town, small pumping station and stand pipes. Estimate of cost. Prereq. Hyd. 104. Elective for students in civil engineering.

Practice, 3 hours; 3d term. Credit 1.

Hyd. 106: Sewerage—Principles of sewer design. House drainage. Modern methods of sewage disposal. Prereq. Hyd. 101. Elective for students in civil and rural engineering.

Lectures and recitations, 2 hours; 3d term. Credit 3.

Hyd. 107: Sewerage—Design of small sewerage system and disposal plant. Elective for students in civil and rural engineering. Must be taken with Hyd. 106.

Practice, 3 hours; 3d term. Credit 1.

Hyd. 108: Drainage—Study of the principles of underground flow. Drainage of farm lands. Planning of the systems. Elective for non-engineering students. Must be taken with Surv. 110.

Lecture and recitation, 1 hour; 3d term. Credit 1.

Hyd. 109: Drainage—Field practice in study of drainage conditions. Planning the system from notes in field. Elective for non-engineering students. Must be taken with Hyd. 108.

Practice, 3 hours; 3d term. Credit 1.

Hyd. 110: Advanced Drainage—Continuation of Hyd. 108 and 109. Elective for rural engineering students.

Lecture, 1 hour; practice, 3 hours. Credit 2.

Hyd. 1: Drainage—Elementary course in farm drainage for students in two-year course in agriculture.

Lectures and recitations, 2 hours; practice, 6 hours.

MACHINE DESIGN

M. Des. 101: Elementary Machine Design—Freehand sketching of the details of machinery and making working drawings of same. Calculations and drawings of a simple type punching press. Prereq. Dr. 108. Required of students in electrical, mechanical and rural engineering.

Lecture and recitation, 1 hour, 1st term; practice, 3 hours; 1st term. Credit 2.

M. Des. 102: Machine Design—A continuation of M. Des. 101. Required of students in electrical and mechanical engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 2d term. Credit 3.

M. Des. 103: Machine Design—A continuation of M. Des. 102. Required of students in mechanical engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 3d term. Credit 3.

M. Des. 104: Kinematics of Machinery—Centrodes. Determination of the instantaneous axis and instantaneous center. Preparation of displacement, velocity and acceleration diagrams. Design of cams. Slow advance and quick return motion for machine tools. Form of tooth outlines in the epicycloidal and involute systems. Prereq. M. Des. 101. Required of students in mechanical engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 3d term. Credit 3.

M. Des. 105: Design of Farm Machinery—The design and drafting of those portions of farm machinery common to engines, and to harvesting, pumping and fertilizing machinery, such as levers, shafts, gears and frames. Prereq. M. Des. 101. Elective for students in rural engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 2d and 3d terms. Credit 6.

M. Des. 1: Machine Drafting and Design—The designing and detailing of a complete machine, including the determination of the stresses and the calculations for the various parts. Both empirical and rational methods are used.

Practice, 6 hours; 1st, 2d and 3d terms.

MATHEMATICS

Math. 101: Trigonometry—Plane and Spherical Trigonometry. Deduction of formulas and their application to the solution of triangles; trigonometric equations, etc. Required of students in engineering.

Lectures and recitations, 5 hours; 1st term. Credit 5.

Math. 102: Trigonometry—An abbreviated course similar to Math. 101. Required of chemical and elective for agricultural students.

Lectures and recitations, 4 hours; 1st term. Credit 4.

Math. 103: Analytic Geometry—Geometry of two and three dimensions, loci of general equations of second degree, higher plane curves, etc. Prerequisite, Math. 101 or 102. Required of students of chemistry and engineering.

Lectures and recitations, 5 hours; 2d and 3d terms. Credit 10.

Math. 104: Advanced Algebra—Algebra beyond that required for admission. Elementary theory of equations, partial fractions, permutations, etc. Required of engineering students.

Lectures and recitations, 3 hours; 1st term. Credit 3.

Math. 105: Calculus—A discussion of the methods used in differentiation and integration and the application of these methods in determining maxima and minima, areas, volumes, moments of inertia, etc. Prerequisite, Math. 103. Required of engineering students.

Lectures and recitations, 2 hours, 1st term; 5 hours, 2d and 3d terms. Credit 12.

Math. 106: Mathematics—A general course in algebra and calculus suited to the needs of the students of chemistry. Prereq. Math. 103.

Lectures and recitations, 3 hours; 1st, 2d and 3d terms. Credit 9.

Math. 107: Differential Equations—The solution of the simpler differential equations is discussed. Prereq. Math. 105. Elective for students in civil and mechanical engineering.

Lectures and recitations, 3 hours; 2d term. Credit 3.

Math. 108: Estimates and Costs—Methods of estimating costs, supplemented by problems of a practical nature. Required of students in civil and rural engineering.

Practice, 3 hours; 1st term. Credit 1.

Math. 1: Shop Mathematics—Advanced arithmetic. Preliminary review. Common and decimal fractions. Short methods and checks. Percentage. Ratio and proportion. Powers and roots. These are based on their relation to shop problems.

Recitations, 4 hours; 1st term.

Math. 2: Shop Mathematics—Algebra, notation and definitions. Addition and subtraction. Multiplication and division. Exponents. Powers and roots. Formulas. Equations. Sufficient drill is given to make direct applications to practical problems in the shop and drawing room.

Recitations, 4 hours; 2d term.

Math. 3: Shop Mathematics—Geometry. Plane surfaces, lines and angles. Triangles. Circles. Pyramids. Prisms. Cones and frustums. Spheres. Some elementary proofs are required of the students. Facts or principles are discussed in ways to show their reasonableness. Devices and methods used by practical men are applied to the solution of problems pertaining to the various trades.

Recitations, 3 hours; 3d term.

Math. 4: Shop Mathematics—Trigonometry and Logarithms. An introduction to trigonometry covering the functions of angles and the solution of right triangles. Logarithms. Trigonometric tables and their uses. Emphasis is placed upon applications to practical problems.

Recitations, 4 hours; 1st term.

Math. 5: Shop Mathematics—Engineering mathematics. The correlation of arithmetic, algebra, geometry and trigonometry is clearly shown in this course and such problems are involved as include a combination of all the student's mathematics in the solution.

Recitations, 4 hours; 3d term.

Math. 6: Estimates and Costs—The object of this course is to teach the student to analyze the probable cost of the construction of machines from the drawings and how to deal with such items as profits, overhead charges and depreciation.

Recitations, 4 hours; 3d term.

MECHANICAL ENGINEERING

M. E. 101: Technical Instruction—Explanation of the reading of mechanical drawings; the proper cutting angles, care and adjustment of carpenter tools; relative strength of wood joints; wood, its shrinking and warping, and how to correct and prevent. Drill in problems in arithmetic, algebra and drawing by notes and lectures. Required of students in mechanical engineering.

Lectures and recitations, 2 hours; 1st term. Credit 2.

M. E. 102: Steam Engines, Boilers and Dynamos—The principles of steam and the steam engine. The slide valve and valve diagrams. The indicator and its diagram. Steam boiler, the various types and their advantages. Each student taking this course is required to spend certain hours in the power plant actually operating the engines, boilers and dynamos. Required of students in electrical and mechanical engineering. Elective for rural engineering students.

Lectures and recitations, 3 hours; 1st term. Credit 3.

M. E. 103: Technical Mechanics—Elementary principles of applied mechanics, calculation of gear and pulley trans, bent levers, calculation of belt lengths, lacing belts, the suction pump, and bolts and screws. Required of students in mechanical engineering.

Lectures and recitations, 2 hours; 2d term. Credit 2.

M. E. 104: Heat Engineering—Laws of fundamental equations; perfect gases; compound, hot-air and gasoline engines; theory of vapors; relation between pressure, volume, temperature, work and heat for special changes of state; calculation and drawing of Carnot's cycle and temperature entropy diagram. The steam turbine. Compressed air and refrigeration machinery. Prereq. M. E. 102. Required of students in electrical and mechanical engineering.

Lectures and recitations, 2 hours; 1st term. Credit 2.

M. E. 105: Heat Engineering—A continuation of M. E. 104. Required of mechanical engineering students.

Lectures and recitations, 3 hours; 2d and 3d terms: Credit 6.

M. E. 106: Heating and Ventilation—The principles of ventilating; amount of heat required for warming; radiating surfaces; steam, hot-water and hot-air systems; vacuum and vapor systems; pipe and pipe systems; appliances; specifications and contracts. Prereq. Dr. 108. Required of mechanical and rural and elective for civil engineering students.

Lectures and recitations, 2 hours; practice, 3 hours; 3d term. Credit 3.

M. E. 107: Farm Machinery—A detailed study of the farm implements. One of the objects of the course is to familiarize the students with the latest improvements in farm machinery. Given by lectures and practical work. Elective for students in agricultural courses. Required of students in rural engineering.

Lectures and recitations, 3 hours; practice, 3 hours; 2d term. Credit 4.

M. E. 108: Advanced Farm Machinery—A continuation of M. E. 107. Elective for students in agricultural courses.

Lecture, 1 hour; practice, 3 hours; 1st term. Credit 2.

M. E. 109: Gas Engines—The fundamental principles concerning the gas engine. Its applications to agricultural operations. Elective for students in agricultural courses.

Lectures and recitations, 3 hours; practice, 3 hours; 2d term. Credit 4.

M. E. 1: Farm Machinery—A course similar to M. E. 107, for students in the two-year course in agriculture.

Lecture and recitation, 1 hour; practice, 3 hours; 2d term.

M. E. 2: Gas Engines—A course similar to M. E. 109, for students in the two-year course in agriculture. Elective.

Lectures and recitations, 2 hours; practice, 3 hours; 3d term.

M. E. 3: Technical Instruction—Explanation of the reading of mechanical drawings; the proper angles for wood-cutting tools, care and adjustment of carpenter tools; relative strength of wood joints; wood, its

shrinking and warping, and how to prevent and correct. Sketching by freehand of tools and apparatus.

Recitations, 2 hours; 1st, 2d and 3d terms.

M. E. 4: Heat Engines—Elementary laws of steam and gases. Principles of the steam, gas and oil engine. The steam turbine. Compressed air and refrigeration machinery.

Recitations, 4 hours; 1st term.

M. E. 5: Technical Mechanics—Mechanics of materials with applications to strength of machine parts, power transmission, belting, gears, cams, rope and chain drives, boilers and pumps.

Recitations, 4 hours; 1st, 2d and 3d terms.

M. E. 6: Power Plant Operation—The actual operation of boilers, engines, pumps and electric generators. This includes heating systems. The work will be done on Friday nights.

Practice, 3 hours; 1st term.

MECHANICS AND MATERIALS OF CONSTRUCTION

Mech. 101: Graphic Statics—The theory and practice of the method of determining stresses in cranes, roof trusses and bridges, and stresses on beams and girders due to traveling loads. Analysis of the stresses in roof trusses by the force polygon. Application of the equilibrium polygon to beams and girders. Analysis of stresses in bridge trusses. Prereq. Phys. 101 and Dr. 102 and 103. Required of engineering students.

Lectures and recitations, 2 hours; practice, 3 hours; 2d term. Credit 3.

Mech. 102: Analytical Mechanics—A study of statics dealing with the composition and resolution of forces, moments, couples, machines and laws of friction; and of dynamics, dealing with velocity, acceleration, laws of motion, work, energy and applications to problems. Prereq. Phys. 101 and Math. 105. Required of engineering students.

Lectures and recitations, 3 hours; 3d term. Credit 3.

Mech. 103: Mechanics of Engineering—The mechanics of solids. Statics of material point and of rigid bodies. Chains and cords. Centrifugal and centripetal forces. Work. Power. Energy. Sliding friction, friction of journals, friction of pivots, friction of ropes and belts. Analysis of stresses in thick cylinders. Prereq. Mech. 102. Required of students in engineering.

Lectures and recitations, 5 hours; 1st term. Credit 5.

Mech. 104: Mechanics of Engineering—A continuation of Mech. 103. Required of students in civil and mechanical engineering.

Lectures and recitations, 2 hours; 2d and 3d terms. Credit 4.

Mech. 105: Materials of Construction—A study of the manufacture, composition and properties of the various materials used in engineering. Required of students in civil and mechanical engineering. Prereq. Mech. 103.

Lectures and recitations, 2 hours; 2d term. Credit 2.

MILITARY INSTRUCTION

(G. O. No. 49—War Department).

M. I. 101: Basic Course—

1. Military art. Three hours a week (counting 14 units).

(a) Practical. Weight 10. Physical drill (Manual of Physical Training—Koehler); Infantry drill (U. S. Infantry Regulations), to include the School of the Soldier, Squad and Company, close and extended order. Preliminary instruction sighting position and aiming drills, gallery practice, nomenclature and care of rifle and equipment.

(b) Theoretical. Weight 4. Theory of target practice, individual and collective (use of landscape targets made up by U. S. Military Disciplinary Barracks, Fort Leavenworth, Kan..; military organization (Tables of Organization); map reading; service of security; personal hygiene.

2. Military Art. Three hours a week (counting 14 units).

(a) Practical. Weight 10. Physical drill (Manual of Physical Training—Koehler); infantry drill (U. S. Infantry Drill Regulations), to include school of battalion, special attention devoted to fire direction and control; ceremonies; manuals (Part V, Infantry Drill Regulations); bayonet combat; intrenchments (584-595, Infantry Drill Regulations); first-aid instruction; range and gallery practice.

(b) Theoretical. Weight 4. Lectures, general military policy as shown by military history of United States and military obligations of citizenship; service of information; combat (to be illustrated by small tactical exercises); United States Infantry Drill Regulations, to include School of Company; camp sanitation for small commands.

M. I. 102: Basic Course—

3. Military Art. Three hours a week (counting 14 units).

(a) Practical. Weight 10. The same as course 2 (a). Combat firing, ifpracticable, but collective firing should be attempted in indoor ranges by devices now in vogue at United States Disciplinary Barracks.

(b) Theoretical. Weight 4. United States Infantry Drill Regulations, to include School of Battalion and Combat (350-622); Small-Arms Firing Regulations; lectures as in (b) course 2; map reading; camp sanitation and camping expedients.

4. Military Art. Three hours a week (counting 14 units).

(a) Practical. Weight 10. The same as course 2 (a); signaling; semaphore and flag; first aid. Work with sand table by constructing to scale intrenchments, field works, obstacles, bridges, etc. Comparison of ground forms (constructed to scale) with terrain as represented on map; range practice.

(b) Theoretical. Weight 4. Lectures, military history (recent); service of information and security (illustrated by small tactical problems in patrolling, advance guards, rear guards, flank guards, trench and mine

warfare, orders, messages and camping expedients); marches and camps (Field Service Regulations and Infantry Drill Regulations).

M. I. 103: Advanced Course—

5. Military Art. Five hours a week (counting 24 units).

(a) Practical. Weight 13. Duties consistent with rank as cadet officers or non-commissioned officers in connection with the practical work and exercises laid down for the unit or units. Military sketching.

(b) Theoretical. Weight 11. Minor tactics; field orders (studies in minor tactics, United States School of the Line); map maneuvers. Weight 8. Company administration, general principles (papers and returns). Weight 1. Military history. Weight 2.

6. Military Art. Five hours a week (counting 24 units).

(a) Practical. Weight 13. Same as (a) course 5. Military sketching.

(b) Theoretical. Weight 11. Minor tactics (continued); map maneuvers. Weight 8. Elements of international law. Weight 2. Property accountability; method of obtaining supplies and equipment (Army Regulations). Weight 1.

M. I. 104: Advanced Course—

7. Military Art. Five hours a week (counting 24 units).

(a) Practical. Weight 13. Duties consistent with rank as cadet officers or non-commissioned officers in connection with the practical work and exercises scheduled for the unit or units. Military sketching.

(b) Theoretical. Weight 11. Tactical problems, small forces, all arms combined; map maneuvers; court-martial proceedings (Manual for Courts-martial). International relations of America from discovery to present day; gradual growth of principles of international law embodied in American diplomacy, legislation and treaties. Lectures: Psychology of war and kindred subjects; general principles of strategy only, planned to show the intimate relationship between the statesman and the soldier (not to exceed five lectures).

8. Military Art. Five hours a week (counting 24 units).

(a) Practical. Weight 13. Same as course 7 (a).

(b) Theoretical. Weight 11. Tactical problems (continued); map maneuvers. Rifle in war. Lectures on military history and policy.

PHYSICS

Phys. 101: Mechanics and Sound—Lectures, recitations and demonstrations on mechanics and sound. Prereq. Math. 103. Required of students in engineering, chemistry and general science. Must be taken with Phys. Lab. 101.

Lectures and recitations, 4 hours; 1st term. Credit 4.

Phys. 102: Electricity and Magnetism—The elementary theory of electricity and magnetism and the practical application of the various laws.

Required of students in engineering, chemistry and general science. Must be taken with Phys. Lab. 102.

Lectures and recitations, 4 hours; 2d term. Credit 4.

Phys. 103: Heat and Light—Nature of heat; expansion, change of state; transmission and radiation of heat, and the elements of thermodynamics. Theory of light; reflection, refraction; dispersion, etc.; use of prisms, lenses and mirrors. Required of students in engineering, chemistry and general science. Must be taken with Phys. Lab. 103.

Lectures and recitations, 4 hours; 3d term. Credit 4.

Phys. 104: General Physics—A discussion of such branches of physics as are suited to the needs of students in the agricultural courses. Elective. Must be taken with Phys. Lab. 104.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms. Credit 6.

PHYSICS LABORATORY

Phys. Lab. 101: Mechanics and Sound—Quantitative experiments illustrating the laws and principles studied under Phys. 101. Required of students in engineering, chemistry and general science. Must be taken with Phys. 101.

Practice, 3 hours; 1st term. Credit 1.

Phys. Lab. 102: Electricity and Magnetism—The study of magnetic fields and the measurement of current, electromotive force, resistance, etc. Required of students in engineering, chemistry and general science. Must be taken with Phys. 102.

Practice, 3 hours; 2d term. Credit 1.

Phys. Lab. 103: Heat and Light—Quantitative experiments in heat and light. Required of students in engineering, chemistry and general science. Must be taken with Phys. 103.

Practice, 3 hours; 3d term. Credit 1.

Phys. Lab. 104. General Physics—Experiments illustrating the subjects discussed in Phys. 104. Elective for students in the agricultural courses. Must be taken with Phys. 104.

Practice, 3 hours; 1st, 2d and 3d terms. Credit 3.

Phys. 1: General Physics—An elementary course including lectures, recitations and laboratory work in mechanics, heat, light, electricity and magnetism. Special attention is paid to practical application.

Recitations, 3 hours; practice, 3 hours; 1st, 2d and 3d terms.

RAILWAY ENGINEERING

Rwys. 101: Railway Curves—Simple and compound curves, frogs, turnouts and crossings. Spirals. Prereq. Surv. 105. Required of students in civil engineering.

Lectures and recitations, 3 hours; 2d term. Credit 3.

Rwys. 102: Railway Earthwork—Cross-sectioning earthwork computations. Haul, overhaul, mass diagrams. Prereq. Rwys. 101. Required of students in civil engineering.

Lectures and recitations, 2 hours; 3d term. Credit 2.

Rwys. 103: Railway Surveying—Preliminary surveys, location surveys taking of cross-sections. Computation of quantities. Estimates. Prereq. Rwys. 101. Must be taken with Rwys. 102. Required of students in civil engineering.

Practice, 6 hours; 3d term. Credit 2.

Rwys. 104: Railway Economics—Ballasting, track fastenings, rails, buildings and structures, terminals, signaling, rolling stock. Promotion, operating expenses, effects of curvature and grade. Valuation, repairs and renewals. Prereq. Rwys. 101. Required of students in civil engineering.

Lectures and recitations, 2 hours; 2d term. Credit 2.

SHOP PRACTICE

Shop. 101: Woodwork—During the first term is taught the use and care of bench tools, exercise in sawing, mortising, tenoning and laying out work from blueprints. The second term is devoted to projects involving construction, decoration and wood-turning. During the third term the principles and process of pattern-making are taught, together with enough foundry work to demonstrate the uses of patern-making. Required of students in mechanical engineering.

Practice, 3 hours; 1st and 3d terms; 6 hours, 2d term. Credit 4.

Shop 102: Woodwork—A course similar to Shop 101, for students in electrical and rural engineering.

Practice, 3 hours; 1st and 2d terms. Credit 2.

Shop 103: Woodwork—A short course similar to the first term of Shop 101, for students in civil engineering.

Practice, 3 hours; 1st term. Credit 1.

Shop 104: Woodwork—A course for students in agricultural courses, in which emphasis is laid on the types of woodwork used on the farm. Elective.

Practice, 3 hours; 2d term. Credit 1.

Shop 105: Blacksmithing—The making of the fire and how to keep it in order. The operations of drawing out, upsetting and bending of iron and steel, including the calculations of stock for bent shapes. Welding. Construction of steel tools for use in the machine shop, including tool dressing and tempering. Annealing. Prereq. Shop 101.

Practice, 6 hours; 2d term. Credit 2.

Shop 106: Blacksmithing—A course similar to Shop 105, for students in electrical and rural engineering.

Practice, 3 hours; 2d term. Credit 1.

Shop 107: Forging and Pipefitting—A course fitted to meet the needs of students in agriculture. Elective.

Practice, 3 hours; 3d term. Credit 1.

Shop 108: Foundry Work—Molding in iron and brass. Core-making. The cupola and its management. Lectures on the selection of irons by fracture, fuels, melting and mixing of metals. Prereq. Shop 105. Required of students in mechanical engineering.

Practice, 6 hours; 3d term. Credit 2.

Shop 109: Machine Work—Elementary principles of vise and machine work, which include turning, planing, drilling, screw-cutting and filing. This is preceded by study of the different machines used in machine shops. Required of students in mechanical engineering.

Practice, 3 hours; 3d term. Credit 1.

Shop 110: Machine Work—A continuation of Shop 109. Required of students in mechanical engineering.

Practice, 9 hours, 1st term; 6 hours, 2d term. Credit 5.

Shop 111: Machine Work—A course suited to the needs of students in electrical engineering.

Practice, 3 hours; 1st and 2d terms. Credit 2.

Shop 1: Farm Woodwork—Use of tools in constructing trestles, gates and frames. Required of students in the two-year course in agriculture.

Practice, 3 hours; 2d term.

Shop 2: Forging and Pipefitting—Similar to Shop 107, for students in the two-year course in agriculture.

Practice, 3 hours; 3d term.

Shop 3: Carpentry and Pattern-Making—Joinery. Pattern and core box construction. Wood-turning.

Practice, 6 hours; 1st term.

Shop 4: Advanced Woodwork—In this course the special needs of the student are considered in laying out the work.

Practice, 3 hours; 3d term.

Shop 5: Blacksmithing—The making of the fire and how to keep it in order. The operations of drawing out, upsetting and bending of iron and steel, including the calculation of stock for bent shapes. Welding. Making, tempering and annealing of steel tools.

Practice, 6 hours; 2d term.

Shop 6: Foundry—Molding in iron and brass. Core-making. The cupola and its management. Lectures on the selection of irons by fracture, fuels, melting and mixing of metals.

Practice, 6 hours; 3d term.

Shop 7: Machine Work—Elementary principles of vise and machine work, which includes chipping, filing, turning, planing, drilling, screw-cutting and polishing. The study of the different machines precedes the operations.

Practice, 6 hours; 1st term.

Shop 8: Advanced Machine Work—Milling, gear-cutting, tool-making including taps, dies and reamers. Plain and differential indexing. Pip cutting and fitting.

Practice, 9 hours; 2d term.

Shop 9: Shop Work—Students will be permitted to specialize in an of the shop courses. The work is of an advanced nature.

Practice, 9 hours; 3d term.

Shop 10: Machine Work—A course similar to Shop 7 for students i electricity.

Practice, 3 hours; 3d term.

STRUCTURAL DESIGN

Str. Des. 101: Elementary Structural Design—This course includes the complete design and detailing of a steel roof truss and a plate girder; the detailing from standard commercial drawing sheets of floor beams, girders and columns, and the complete design of a bridge truss of either the Warren or Pratt type. The stresses are determined by both analytical and graphic methods. Prereq. Mech. 103. Required of students in civil and rural engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 2 and 3d terms. Credit 6.

Str. Des. 102: Structural Design—Analysis of stresses in structural steel buildings. Design of roof trusses. Design of truss bridges and highway bridges. Design of plate girders under dead and live loads. Design of riveted connections. Both analytical and graphical methods are used. Prereq. Str. Des. 101. Required of students in civil engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 1st, 2d and 3d terms. Credit 9.

Str. Des. 103: Structural Design—Analysis of stresses in traveling cranes and derricks. Design of crane girders and lattice girders. Design of cranes. Both analytical and graphical methods are used. Design of riveted connections. Prereq. M. Des. 102. Required of students in mechanical engineering.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms; practice, 6 hours, 1st and 3 terms; 3 hours, 2d term. Credit 11.

Str. Des. 104: Concrete Theory—Manufacture, tests and uses of cement and concrete. Design of slabs, beams, girders and columns, plain and reinforced. Prereq. Mec. 103. Required of students in civil and rural engineering.

Lectures and recitations, 2 hours; 1st term. Credit 2.

Str. Des. 105: Concrete Design—Design of retaining walls, foundations and arches, plain and reinforced. Prereq. Str. Des. 104. Required for civil and elective for rural engineering students.

Lectures and recitations, 2 hours; 2d term. Credit 2.

Str. Des. 106: Retaining Walls and Concrete Arches—Design of a typical retaining wall and complete design of an arch of reinforced concrete construction, including abutments. Must be taken with Str. Des. 105. Required for civil and elective for rural engineering students.

Practice, 3 hours; 2d term. Credit 1.

Str. Des. 107: Design of Farm Structures—The design and arrangement of farm buildings and equipment. Lectures also cover the heating, lighting, ventilation, plumbing and costs. Prereq. Str. Des. 101. Elective for students in rural engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 2d and 3d terms. Credit 6.

Str. Des. 108: School Architecture—The planning and detailing of moderate priced and medium sized school buildings, including the heating, ventilation, lighting and plumbing. Prereq. Str. Des. 101. Elective for students in rural engineering.

Lectures and recitations, 3 hours; practice, 3 hours; 3d term. Credit 4.

Str. Des. 109: Farm Buildings—Design and specifications of a simple typical building in timber or concrete and lectures upon the details. The course is very practical and latitude is permitted the student to develop his ideas. Prereq. Dr. 107. Elective for non-engineering students.

Lectures and recitations, 1 hour; practice, 3 hours; 1st term. Credit 2.

Str. Des. 1: Farm Buildings—An elementary course similar to Str. Des. 109. Prereq. Dr. 1. Required of students in the two-year course in agriculture.

Lectures and recitations, 1 hour; practice, 3 hours; 1st term.

SURVEYING

Surv. 101: Surveying—Elements of surveying. Measurement of horizontal and level lines. Errors, use of compass, transit and level. Prereq. Math. 101. Required of students in civil, electrical and rural engineering.

Lectures and recitations, 2 hours; 2d term. Credit 2.

Surv. 102: Surveying—Application of the principles of elementary surveying to practical operations in the field. Measurement of lines, angles, elevations. Introductory use of the transit and level. Prereq. Surv. 101. Required of students in civil, electrical and rural engineering.

Practice, 3 hours; 3d term. Credit 1.

Surv. 103: Surveying—Adjustment of instruments. Determination of direction. Measurement of angles. Land survey methods and computations. Prereq. Surv. 102. Required of students in civil and rural engineering. Must be taken with Surv. 104.

Lectures and recitations, 2 hours; 1st term. Credit 2.

Surv. 104: Surveying—Transit lines, level lines, traversing, mapping, computation of areas. Required of students in civil and rural engineering. Must be taken with Surv. 103.

Practice, 3 hours; 1st term. Credit 1.

Surv. 105: Advanced Surveying—Theory of stadia. General surveying methods. Topographic surveying. Plane table. Earthwork computations. City surveying. Hydrographic surveying. Prereq. Surv. 103. Required of students in civil engineering.

Lectures and recitations, 4 hours; 2d term. Credit 4.

Surv. 106: Advanced Surveying—Use of plane table. Topographic mapping. Solar observations. Prereq. Surv. 105. Required of students in civil engineering.

Practice, 3 hours; 3d term. Credit 1.

Surv. 107: Topographic Surveying—Adjustment of instruments. Base line measurements. Elements of triangulation and adjustment of quadrilaterals. Prereq. Surv. 106. Required of students in civil engineering.

Practice, 3 hours; 1st term. Credit 1.

Surv. 108: Geodesy—Brief outline of the method of least squares. Applications to precise surveying, leveling and triangulation. Astronomical observations for azimuth, latitude, time and longitude. Prereq. Surv. 105. Elective for students in civil engineering.

Lectures and recitations, 3 hours; 2d term. Credit 3.

Surv. 109: Geodesy—Practice in problems developed in Surv. 109. Elective for students in civil engineering.

Practice, 3 hours; 3d term. Credit 1.

Surv. 110: Elementary Surveying—Measurement of lines, angles and elevations. Elementary use of transit and level. Prereq. Math. 101. Elective for non-engineering students. Must be taken with Hyd. 108.

Lectures and recitations, 1 hour; 3d term. Credit 1.

Surv. 111: Elementary Surveying—Application of principles of plane surveying to practical operations in the field. Profiles, trannes, computations of areas. Elective for non-engineering students. Must be taken with Surv. 110.

Practice, 3 hours; 3d term. Credit 1.

FACILITIES FOR INSTRUCTION

The Engineering Building is equipped with lecture-rooms, recitation-rooms, drafting-rooms, laboratories and shops for all of the engineering work except farm machinery, which is located in the Agricultural Building. The departments of Mathematics and Physics are also located in the Engineering Building. Quarters are provided for the Military Department in Calvert Hall.

The three drafting-rooms are well equipped for practical work. Two of these are used by the junior and senior classes, each student being provided with a separate desk. The third

room is used jointly by the freshman and sophomore students and contains 15 drawing tables, accommodating about 90 students.

Engineering students are to provide themselves with approved drawing outfit, materials and book, cost of which during the freshman year amounts to about $15. The cost to other students taking mechanical drawing is about $5. The College does not furnish these, but they are purchased by the student and are his property.

The combined blueprint and dark room, with its commodious printing frames, affords splendid opportunities for sun-printing, which is so useful to engineering students.

This laboratory is fitted with such appliances as may be used to the best advantage in engineering practice. These include a potentiometer and standard voltmeter and ammeter for calibrating the various measuring instruments used in the laboratory. A Sharp-Miller portable photometer and a standard photometer for measuring the candle power of lamps and for determination of illumination intensities. A large number of portable ammeters, voltmeters and indicating wattmeters for direct and alternating current measurements, standard curve drawing voltmeter and ammeter, electrostatic voltmeter, frequency meters, silver and copper voltameters, Siemen's type electrodynaomometer, watthour meters and an oscillograph. A standard portable testing set, heating devices, condensers, tachometers, multiple circuit ammeter and voltmeter switches. D'Arsonval galvanometers, standard resistance boxes and bridges. The lamps used for experimental purposes include direct and alternating current multiple carbon arc, metallic arc, mercury vapor and nernst lamps.

A Curtis steam turbine, direct connected to a 35-kilowatt compound generator, has been installed for testing purposes. This may be used in connection with the College lighting plant when needed and will be used for light and power service in the Engineering Building.

The laboratory is so wired that connection may be made readily with any part of the College lighting plant with the

turbo-generator or with any of the apparatus in the dynamo-room.

The apparatus in the dynamo-room includes the following: A 10-kilowatt rotary converter of the latest type, with speed limit and end play devices; a five-horsepower variable speed, commutating pole motor; a 7.5 kilowatt, 60-cycle, 220-volt alternator designed to operate either as a polyphase generator, synchronous motor, frequency changer, constant speed induction motor or variable speed induction motor. The following parts are supplied with the set to make possible its operation in any of the above-named ways; a stationary armature for use either as an alternating current generator or as an induction motor field; a revolving field, a squirrel cage induction motor rotor with starting compensator having self-contained switches; an induction motor rotor with 3-phase collector rings, external resistance and controller; a 2-kilowatt booster set; a five-horsepower compound direct current motor and a 1.5 horsepower shunt motor fully inclosed; a 7.5 kilowatt, 120-volt, 3-phase self-excited generator direct connected to a 115-volt compound direct current motor; a motor-generator set consisting of a 3.6 horsepower shunt motor direct connected to a 2-kilowatt generator; several small D. C. and A. C. motors and generators; two 2-kilowatt transformers to transform power from 110 or 220 volts to 1100 or 2200 volts; various types of starting rheostats with automatic overload and no voltage release; field rheostats.

The main switchboards are used to mount the necessary circuit apparatus to control the generators and motors as well as the various circuits in the dynamo-room and testing laboratory. Wire and water rheostats are arranged for load and regulation. Portable lampboards and portable switchboards have been constructed for use in machine tests. In addition to the special electrical engineering equipment, the College lighting plant will be used for illustrative and experimental purposes. This plant contains, together with other apparatus useful in teaching electrical engineering, two Bullock generators of 40 kilowatts total capacity.

An eight-inch Waltham bench lathe, with all the necessary attachments, has been installed in the dynamo-room for the use of students in making small articles, such as binding posts, connecters, etc., for use in the laboratories.

The telephone laboratory is well equipped with apparatus for the magneto and common battery systems.

APPARATUS IN LABORATORIES

In the Farm Machinery Laboratory the different implements, machines, gasoline engines, etc., used on farms are to be found. Much of it is loaned by the manufacturers.

In the Hydraulic Laboratory hydraulic apparatus of a character suitable to the needs of the students has been installed.

In the Materials Laboratory the apparatus for testing materials includes a 100,000-pound Riehle combined hand and power testing machine for making tensile, compression, shearing and transverse tests on various kinds of materials; a 1,000-pound Riehle machine for testing cement briquettes, etc. The testing of asphalts, tars, etc., used in roadwork is carried on under the direction of the Department of Chemistry.

MECHANICAL ENGINEERING LABORATORY

Among the apparatus installed in the laboratory are a cross compound condensing Corliss engine of 50 horsepower, equipped with brake, indicators, relief valves, reducing motion, steam and vacuum gauges and speed indicator, which gives ample opportunity for steam consumption and brake tests. This is connected with the shops, so that at any time it may be switched on and drive them. The College power plant, with its vacuum heating system, three 100-horsepower return tubular boilers and two electric generating units, offers unexcelled opportunities for experimental work. A six-horsepower, four-cycle gasoline engine equipped with prony brake permits the making of tests in gas engineering.

The Physics Laboratory is well supplied with apparatus for lecture-room demonstrations and for experiments undertaken

by students. New pieces of apparatus are added to the equipment each year.

The shops are well lighted and admirably adapted to the purpose for which they were designed. The wood-working shop contains accommodations for bench work and wood turning. The power machinery in this shop is a band and universal circular saw, five 12-inch turning lathes, one 16-inch by 10-foot patternmaker's lathe, a grindstone, wood trimmer, 26-inch wood planer and universal tool grinder.

In the forge shops are 16 power forges, 2 hand forges and a pressure fan and exhauster for keeping the shop free of smoke. There is a full assortment of smith's tools for each forge.

The foundry is equipped with an iron cupola, which melts 1,200 pounds of iron per hour, a brass furnace, one core oven and the necessary flasks and tools.

The machine shop equipment consists of 1 10-inch speed lathe, 1 22-inch engine lathe with compound rest, 1 12-inch combined foot and power lathe, 2 14-inch engine lathes, 1 24-inch drill press, 1 No. 4 emery tool grinder, 1 No. 1½ universal milling machine and an assortment of vises, taps, dies, pipe-tools and measuring instruments.

The machinery of the pattern and machine shops is driven by a 9 by 14 inch automatic cut-off, high-speed engine, built by members of the junior and senior mechanical engineering classes, after the standard design of the Atlas engine. An 8 by 12 inch engine drives the machinery of the blacksmith shop and foundry. It was presented to the College by the city of Baltimore and secured through the efforts of the late Rear-Admiral John D. Ford.

The surveying equipment includes a number of transits, levels, compasses, plane tables and minor instruments for use in plane, topographic, railroad and geodetic work. These are added to as the necessity for other equipment arises.

Division of General Science

OFFICERS OF INSTRUCTION

H. B. McDONNELL..Dean, Professor of Chemistry.
L. B. BROUGHTON...Professor of Analytical Chemistry.
R. C. WILEY.....Assistant Professor of Chemistry.
E. R. HITCHNER....Assistant Professor of Bacteriology and Chemistry.
C. G. REMSBERG.....Assistant in Analytical Chemistry.

INTRODUCTION

The Division of General Science is charged with two distinct classes of work. (1) The licensing, inspection and analysis of fertilizers, feeds and agricultural lime sold in the State, the professor of chemistry being, ex officio, the State Chemist. The results of this work are published in a "quarterly" bulletin, which is sent free to all Maryland farmers who apply for it. (2) The instruction of students.

The Chemical Laboratory Building contains laboratories, office and balance room for the State fertilizer, feed and lime control work, lecture room, supply room and four other laboratories. In addition classrooms in Morrill Hall are used and two bacteriological laboratories in the new Agricultural Building.

The laboratories are well equipped with standard apparatus and chemicals, chemical and assay balances, polariscopes, refractometers, spectroscopes, microscopes with high-power oil immersion lenses, etc. Each student is provided with a locker, reagents and apparatus and has the use of a working desk.

The division is provided with a library of standard reference books on chemistry and related subjects, to which additions are made from time to time.

Instruction in chemistry is begun with the first term of the freshman year. Laboratory work by the student is emphasized and special attention is given to elements and compounds of practical and economic importance. The first year is in-

tended to give the student that practical and theoretical knowledge of elementary chemistry which is essential in the education of every man, no matter what his vocation. It also serves as a foundation for advanced work in chemistry, if the course in chemistry is chosen.

OUTLINE OF COURSES OFFERED

The required and elective work of the various departments of the division is outlined on the following pages. The College reserves the right to withdraw any course at any time.

CHEMICAL COURSE

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
English 101—Composition and Rhetoric	3	3	3
Public Speaking 101	1	1	1
Zoology 101—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6)
Mathematics 101—Trigonometry	4		
Mathematics 102—Analytics		5	5
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Drawing 103—Mechanical Drawing	3		
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Language—Modern Language	3	3	3
Chemistry 113—Advanced Inorganic Chemistry	2	2	2
Chemistry 103—Qualitative Analysis	1(6)		
Chemistry 105—Quantitative Analysis		1(6)	1(6)
Mathematics 103—Advanced Algebra	3		
Mathematics 104—Calculus		3	3
Botany 103—Plant Physiology	1(6)		
Botany 104—Plant Physiology		2(6)	
Botany 116—Plant Micro-Chemistry		(6)	
Soils 101—Introductory Study of Soils	2(3)		
Geology 102—General Geology			3(3)
Geology 101—Determinative Mineralogy			1(3)
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
JUNIOR YEAR.			
Language—Modern Language	3	3	3
Chemistry 108—Organic Chemistry	3(3)	3(3)	3(3)
Chemistry 106—Quantitative Analysis	2(9)	2(9)	2(9)
Physics 101 and 104—Mechanics and Sound	4(3)		
Physics 102 and 105—Electricity and Magnetism		4(3)	
Physics 103 and 106—Heat and Light			4(3)
Military Instruction 103—Advanced Course	R	R	R
SENIOR YEAR.			
English 104—Lectures and Technical Composition	2	2	2
Rural Economics 102—Principles of Economics	3	3	
Rural Economics 103—Problems in Rural Economics			3
Chemistry 109—Agricultural Chemistry	3		
Chemistry 110 and 115—Agricultural Chemical Analysis	(6)	(6)	(6)
Chemistry 111—Physiological Chemistry	3(3)		
Chemistry 112—Physical Chemistry		3(3)	3(3)
Chemistry 114—Industrial Chemistry		3	3
Military Instruction 104—Advanced Course	R	R	R

GENERAL SCIENCE

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
English 101—Composition and Rhetoric	3	3	3
Public Speaking 101	1	1	1
Zoology 101—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6)
Mathematics 101—Trigonometry	5		
Mathematics 102—Analytics		5	5
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Language—Modern Language	3	3	3
English 102—English Composition	2	2	2
Public Speaking 102	1	1	1
Mathematics 103—Advanced Algebra	3		
Mathematics 104—Calculus		3	3
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
Electives	8	8	8
JUNIOR YEAR.			
Rural Economics 102—Principles of Economics	3	3	
Government 104—Law of Contracts			3
Language—Modern Language	3	3	3
Physics 101 and 104—Mechanics and Sound	4(3)		
Physics 102 and 105—Electricity and Magnetism	4(3)		
Physics 103 and 106—Heat and Light			4(3)
Military Instruction 103—Advanced Course	R	R	R
Electives	6	6	6
SENIOR YEAR.			
Government 101	2	2	2
Military Instruction 104—Advanced Course	R	R	R
Electives	15	15	15

*SUGGESTED ELECTIVES FOR STUDENTS IN GENERAL SCIENCE

SUBJECT.	TERM.		
SOPHOMORE YEAR.	I	II	III
Botany 102-103-104—Plant Histology and Physiology	4	4	4
Botany 116—Plant Micro-Chemistry		2	
Chemistry 104 and 105—Quantitative Analysis	3	3	3
Chemistry 113—Inorganic Chemistry	2	2	2
Zoology—Advanced Zoology	4	4	4
Soils 101—A Study of Soils		4	
Geology 102—General Geology			4
Literature—English Literature	2	2	2
Drawing 103—Mechanical Drawing	2	2	2
Zoology—General Entomology			3
JUNIOR YEAR.			
English	2	2	2
Public Speaking	1	3	1
Chemistry 108—Organic Chemistry	4	3	4
Bacteriology 101—General Bacteriology	3	3	3
Botany 105—General Plant Pathology		3	
Botany 110—Genetics		3	
Chemistry 104 and 105—Quantitative Analysis	3	3	3
Botany 112—Systematic Botany			3
Education 101—Problems in Secondary Education	3	3	
Education 102—Educational Psychology			3
Education 103—School Observations and General Methods	2	2	2
Soils 102—Advanced Course	3		
Geology 101—Determinative Mineralogy			2
SENIOR YEAR.			
Chemistry 109—Agricultural Chemistry	3		
Chemistry 111—Physiological Chemistry	4		
Bacteriology 101—General or Advanced Bacteriology	3	3	3
Chemistry 112—Physical Chemistry		3	3
Language—Modern Language	3	3	3
English	2	2	2
Education 104—Vocational Education	2		
Education 105—Special Methods in Secondary Vocational Agriculture		2	2
Rural Economics 104—Economics	3	3	3

*Subjects not indicated may be available.

*If any elective is not available when indicated because of conflicts or otherwise, it may be elected the following year. In all cases the students must consult their advisers.

DESCRIPTION OF SUBJECTS OFFERED

Following are descriptions of the courses offered by the various departments in the Division of General Science:

Chemical Course—The course in Chemistry differs but little from the other courses until the beginning of the sophomore year and the work in the freshman year of any of the four-year courses will prepare for it, as the amount of chemistry is

the same in all courses to the beginning of the sophomore year and the demands on the agricultural or technical chemist are now so varied that a foundation with more of the essentials of the agricultural or the engineering courses is often desirable.

Beginning with the sophomore year the major part of the student's time is devoted to chemistry, the practical work in the laboratory occupying approximately half his time. The course is essentially a course in agricultural chemistry, fitting the graduate for positions in agricultural colleges, experiment stations and the United States Department of Agriculture.

General Science Course—The General Science Course is offered to those young men who have not chosen as their vocation in life any of the technical professions, but who are seeking for such general culture as will fit them to become, after graduation, useful members of society. Young men desiring to study law or medicine or the liberal arts, or to become teachers, will find in the curriculum of this course a highly satisfactory preparation for such work. While emphasis has been placed upon subjects such as English language, literature, history, mathematics, etc., natural science occupies a prominent place in the course and the range of electives will enable each to choose for himself, under certain necessary regulations, such a group of studies as will be best adapted to his own peculiar requirements.

A wide range of electives is offered in order to meet, as far as possible, the needs of every student. At the opening of the session the student must select, with the approval of the Dean of the division, a consistent group of courses for the year. No change may be made in this group later in the session, except with the approval of the Dean.

CHEMISTRY

Chem. 101: General Chemistry—Recitations, lectures and practical work in the laboratory, where the student performs the experiments under the direction of instructors.

Lectures, 3 hours; practice, 3 hours; 1st and 2d terms. Credit 8.

Chem. 102: The Metals and Qualitative Analysis—A theoretical study of the occurrence, properties and metallurgy of the common metals, supplemented by a laboratory course in qualitative analysis.

Lectures, 2 hours; practice, 6 hours; 3d term. Credit 4.

Chem. 103: Qualitative Analysis—An advanced course of qualitative analysis. Prereq. Chem. 101-102.

Lecture, 1 hour; practice, 6 hours; 1st term. Credit 3.

Chem. 104: Quantitative Analysis—A brief course illustrating some of the general principles of the quantitative study of chemistry. In the latter part of the course the students are given samples of fertilizers, feeds, butter, milk, etc., for analysis. Prereq. Chem. 101-102.

Lecture, 1 hour; practice, 6 hours; 1st and 2d terms. Credit 3.

Chem. 105: Quantitative Analysis—The principal operations of quantitative analysis. Standardization of the chemical balance. Standardization of weights and apparatus used in chemical analysis. Typical gravimetric, volumetric, colormetric and electrolytic methods are taken up and discussed. Prereq. Chem. 101-102.

Lecture, 1 hour; practice, 6 hours; 2d and 3d terms. Credit 3.

Chem. 106: Quantitative Analysis—A continuation of course 105. An advanced course of quantitative analysis which consists of a study of methods used in the agricultural and industrial chemical world. Prereq. Chem. 104 or 105.

Lectures, 2 hours; practice, 9 hours; 1st, 2d and 3d terms. Credit 5.

Chem. 107: Agricultural Organic Chemistry—A study of the principal organic compounds of agriculture. Prereq. Chem. 101-102.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

Chem. 108: Organic Chemistry—The chemistry of the carbon compounds. Prereq. Chem. 101-102.

Lectures, 3 hours; practice, 3 hours; 1st, 2d and 3d terms. Credit 4.

Chem. 109: Agricultural Chemistry—The chemistry of soils, fertilizers, plant life, animal life, etc. Prereq. Chem. 101-102.

Lectures, 3 hours; 1st term. Credit 3.

Chem. 110: Agricultural Chemical Analysis—An advanced course in the analysis of fertilizers and fertilizing materials, feeding stuffs, butter, milk, sugar, starch, etc. Prereq. Chem. 104.

Practice, 6 hours; 1st term. Credit 2.

Chem. 111: Physiological Chemistry—Lectures and recitations. Prereq. Chem. 107 or 108.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

Chem. 112: Physical Chemistry—A study of the advanced theories of chemistry. The laboratory consists of the determination of the boiling and melting points, lowering of the freezing point by substances in solution, determination of vapor densities, etc. Prereq. Chem. 104-107.

Lectures, 3 hours; practice, 3 hours; 2d and 3d terms. Credit 4.

Chem. 113: Inorganic Chemistry—An advanced course covering more in detail the subject matter set forth in the general chemistry offered in the freshman year. Prereq. Chem. 101.

Lectures, 2 hours; 1st, 2d and 3d terms. Credit 2.

Chem. 114: Industrial Chemistry—The study of the practical methods employed in various chemical industries. Visits are made to ice, fermen-

tation and gas plants; also to fertilizer, glass, iron and steel works, etc. Prereq. Chem. 113.

Lectures, 3 hours; 2d and 3d terms. Credit 3.

Chem. 115: Advanced Agricultural Analysis—Prereq. Chem. 104-105.

Practice, 6 hours; 2d and 3d terms. Credit 2.

Chem. 116: Thesis—Investigation along agricultural chemical lines to be embodied in a graduating thesis.

Chem. 1: Farm Chemistry—This course consists of an elementary study of general and agricultural chemistry, with special reference to the chemistry of plants, animals, fertilizers, etc.

Lectures, 3 hours; practice, 3 hours; 1st and 2d terms.

GEOLOGY

Geol. 101: Determinative Mineralogy—This is a course of determinative mineralogy. The more important minerals are identified by their characteristic physical and chemical properties. Prereq. Chem. 101-102.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

Geol. 102: General Geology—A course in the history of dynamic, stratigraphic and physiographic geology. The latter part of the course is devoted to the geology of Maryland, specially as affecting the character of the soil, mineral wealth and other economic conditions of the State.

Lectures, 3 hours; practice, 3 hours; 3d term. Credit 4.

Geol. 103: Engineering Geology—Discussion of the principles of geology. Study of geological materials of importance in engineering. Practical field work.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

BACTERIOLOGY

Bact. 101: General Bacteriology—Preparation of media and stains. The practical application of various methods of sterilization. A study of the various procedures for anærobic development and isolation of bacteria in pure cultures. Standard procedures for the examination of pure cultures, supplemented by a routine determination of the morphological and physiological characteristics of pure cultures isolated from nature and having special functions in the field of agriculture, dairying and sanitation. The routine bacteriological examination of drinking waters, milk and its products, foods, soils and disinfectants. Lectures and practical demonstrations in immunity and resistance. Prereq. Chem. 101-102.

Lecture, 1 hour; practice, 6 hours; 1st, 2d and 3d terms. Credit 3.

TWO-YEAR AGRICULTURAL COURSE

Bact. 1: Bacteriology—Lectures and practical demonstrations of subjects pertaining to agricultural and dairy bacteriology, with emphasis on the bacteria in milk and soils.

Practice, 3 hours; 2d term.

Division of Vocational Education

OFFICERS OF INSTRUCTION

HAROLD F. COTTERMAN....Dean and Professor of Agricultural Education.
L. A. EMERSON.....Professor of Trade and Industrial Education.
——— ——— ———Professor of Home Economics Education.
W. T. L. TALIAFERRO.....Professor of Farm Management.
P. F. BROOKENS.....Assistant Professor of Rural Economics.
GEORGE J. SCHULZ.....Instructor in Government and History.

INTRODUCTION

The Division of Vocational Education offers opportunity to prepare for teaching in secondary vocational schools of the types encouraged by the Smith-Hughes Act. As a means to that end its vocational education curricula and courses have the approval of the Maryland State Board of Education. Graduates from its curricula are eligible for certification by the State Superintendent of Schools without examination. The work is organized in four departments—namely, Agricultural Education, Home Economics Education, Trade and Industrial Education and Supervised Teaching.

In addition to the teacher training work, the division also includes the departments of Government, History and Rural Economics.

The four-year curricula of the division consist of regular collegiate courses and lead to the Bachelor's degree given by the College. These curricula consist of Agricultural Education, Home Economics Education, Trade and Industrial Education and Farm Management and Agricultural Economics. The Home Economics Education curriculum is offered in co-operation with the Division of Home Economics.

One-year curricula for the training of teachers of trade and industrial subjects and teachers of related trade and industrial subjects will be offered to persons of maturity. Upon the satis-

factory completion of such curricula, prospective teachers wi be issued certificates of proficiency.

As the need for evening classes in Trade and Industrial an Home Economics Education arises, special curricula in thes fields will be offered at centers throughout the State. Th number and location of these centers will depend entirely upo the need and demand for such instruction. The courses wi be organized on the short-unit basis and will be maintaine only as long as the demand justifies it. Upon the satisfactor completion of such special curricula students will be issue certificates of proficiency.

Follow-Up Courses

By a uniform system of follow-up, the division keeps a com plete record of the qualifications of the prospective teacher, o his work while in training, and of his efficiency as a teache upon entering the field. As the beginning teacher's trainin is not considered complete until he has demonstrated his abilit to turn out workers proficient in the vocation for which he i offering instruction, an attempt is made to give him such hel as he may need from time to time, particularly during his firs year's teaching experience.

In summer courses in vocational education are offered fo the benefit of teachers in service and such individuals as may be able to qualify for the teaching of a vocation upon the completion of the work.

By a system of itinerant teaching, special courses in vocational education are offered in evenings and on Saturdays to teachers in service.

COURSES

Agricultural Education—In addition to the entrance requirements, involving graduation from a standard four-year high school, students electing the Agricultural Education curriculum must present evidence of having acquired farm experience after reaching the age of 14 years. Graduation will depend upon the successful completion of the curriculum as laid down and

farm experience equivalent to at least two years of farm work. Some of the farm experience may be acquired after the student has entered College.

The 48 hours of electives allowed by this curriculum may be selected from any of the courses offered by the College for which the student has the necessary prerequisites. This freedom affords not only an opportunity to acquire a broad training in agriculture of the type needed for farming and teaching the vocation, but permits also some specialization in a particular field of production as agronomy, pomology, vegetable gardening, or animal husbandry. In making such elections the student should consult the Dean in charge of the specialty as well as the Dean of this division. Students should arrange their work so that at least 40 per cent. of their time will have been spent on technical agriculture, 25 per cent. on scientific subjects, 20 per cent. on subjects of a general educational character and from 12 to 15 per cent. on subjects in professional education.

AGRICULTURAL EDUCATION

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	II
English	3	3	3
Public Speaking	1	1	1
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6
Zoology 101 and 102—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6
Vocational Education 101—Freshman Lectures	1	1	1
History 101-102-103—Industrial History, or Mathematics, or Language	4	4	4
Military Instruction 101—Basic Course	1(2)	1(2)	1(2
SOPHOMORE YEAR.			
Agronomy 101—Cereal Crops	3(3)		
Soils 101—Introductory Study of Soils		3(3)	
Geology			3(3)
Pomology 101—Principles of Pomology	3(3)		
Botany 103 and 104—Plant Physiology		2(6)	2(6)
Animal Husbandry	3(3)	2(3)	
Vegetable Gardening 101—Principles of Vegetable Gardening			3(3)
Elective	5	6	5
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
JUNIOR YEAR.			
English	2	2	2
Rural Economics 101—Principles of Economics	3	3	
Soils 102	2(3)		
Poultry		2(3)	
Agronomy 103—Forage Crops			2(3)
Vocational Education 102—Principles of Teaching	3		
Vocational Education 103—Educational Psychology		3	
Vocational Education 104—Observation and Methods	1(3)	1(3)	
Vocational Education 105—Methods in Vocational Agriculture			3
Voational Education 106—Observation and Methods			1(3)
Elective	4	4	6
Military Instruction 103—Advanced Course	R	R	R
SENIOR YEAR.			
Rural Economics 108—Farm Accounting	3(3)		
Rural Economics 109—Farm Management		3(3)	3(3)
Rural Economics 107—Community Study	2	2	2
Vocational Education 107—Methods in Vocational Agriculture	(6)	(6)	
Vocational Education 108—Supervised Teaching and Observation	5	1(3)	1(3)
Vocational Education 109—Problems in Secondary Education			2
Elective	4	7	7
Military Instruction 104—Advanced Course	R	R	R

HOME ECONOMICS EDUCATION

Applicants for admission to the Home Economics Education curriculum should present, in addition to the equivalent of a high school education, evidence of having had practical experience in the home. If practical experience is not presented for entrance, it must be acquired before graduation.

The 40 hours of electives allowed by this curriculum may be selected from any of the courses offered by the College for which the student has the necessary prerequisites. In making elections students should consult the Dean of Home Economics as well as the Dean of this division.

For further description of Home Economics Education curriculum see Division of Home Economics.

TRADE AND INDUSTRIAL EDUCATION

Several types of curricula will be offered those desiring to prepare for trade and industrial teaching—namely, four-year, one-year and special evening curricula.

To enter a four-year curriculum for the training of teachers of related trade and industrial subjects, applicants must present evidence of having had the equivalent of a high school education and evidence of satisfactory contact with the trade or willingness to acquire such contact while in training. Applicants for admission to one-year curricula for the training of teachers of related industrial subjects must present evidence of having served two years in the trade, or two years in a technical school and must have a general education equivalent to three years in high school. Applicants for admission to one-year curricula for the training of shop teachers must have completed the elementary school, served an apprenticeship and at least one year as a journeyman. Applicants for admission to special evening teacher training classes must present evidence of having had two years' experience as a journeyman in the trade and evidence of having completed the equivalent of an elementary school education.

For a further description of Trade and Industrial Education curricula write for special circular.

FARM MANAGEMENT AND AGRICULTURAL ECONOMICS

The Farm Management and Agricultural Economics curriculum offers opportunity to train for farm management and for special investigational work along economic lines.

The elections allowed by this curriculum may be made from any of the courses offered by the College for which the student is qualified to enroll. Students are encouraged to make elections along some particular line of agricultural production as agronomy, pomology, vegetable gardening, or animal husbandry. In making such elections students should consult the Dean in charge of the specialty as well as the Dean of this division.

FARM MANAGEMENT AND AGRICULTURAL ECONOMICS

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
English 101—Composition, Rhetoric and Readings in English Prose	3	3	3
Public Speaking 101—Elements of Public Speaking	1	1	1
Chemistry 101—General Chemistry	3(3)	3(3)	
Chemistry 102—The Metals and Qualitative Analysis			2(6)
Zoology 101 and 102—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6)
Vocational Education 101—Freshman Lectures	1	1	1
History 101-102-103—Industrial History, or Mathematics, or Language	4	4	4
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SOPHOMORE YEAR.			
Agronomy 101—Cereal Crops	3(3)		
Soils 101—Introductory Study of Soils		3(3)	
Geology			3(3)
Botany 102—Plant Histology	2(3)		
Botany 103 and 104—Plant Physiology		2(6)	2(6)
Animal Husbandry or Horticulture			
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
Elective	5	5	5
JUNIOR YEAR.			
English	2	2	2
Rural Economics 101—Principles of Economics	3	3	
Rural Economics 102—Problems in Rural Economics			3
Soils 102	2(3)		
Soils 104—Fertilizers			2(3)
Agronomy 103—Farm Crops			2(3)
Government 101	2	2	2
Military Instruction 103—Advanced Course	R	R	R
Elective	7	10	4
SENIOR YEAR.			
Rural Economics 108—Farm Accounting	3(3)		
Rural Economics 109—Farm Management		3(3)	3(3)
Rural Economics 107—Community Study	2	2	2
Rural Economics 104—Principles of Rural Organization	3		
Rural Economics 105—Markets and the Marketing of Farm Products		3	
Rural Economics 106—Co-operative Marketing			3
Military Instruction—Advanced Course	R	R	R
Elective	8	8	8

DESCRIPTION OF COURSES

Agricultural Education

Voc. Ed. 101: Freshman Lectures—A general description of vocationa opportunities as exemplified by the various curricula of the Marylanc State College of Agriculture. This course is intended primarily to assis the student in selecting his curriculum and courses for the succeeding years.

Lecture, 1 hour; 1st, 2d and 3d terms. Credit 1.

Voc. Ed. 102: Principles of Teaching—A survey of the aims of secondary education, the nature of the high school pupil, types of learning, types of presentation, selection and organization of subject matter, supervised study, discipline and teaching ideals. Open only to juniors and seniors.

Lectures, 3 hours; 1st term. Credit 3.

Voc. Ed. 103: Educational Psychology—An intensive study of the nature of the individual, combining the important topics of both general and educational psychology, and stressing particularly the traits and characteristics of adolescence. Prereq. Voc. Ed. 102.

Lectures, 3 hours; 2d term. Credit 3.

Voc. Ed. 104: Observation and Methods*—A study of methods as exemplified in the classroom teaching of secondary teachers in Maryland and in the city of Washington. This course must parallel Voc. Ed. 102 and 103. Open only to juniors and seniors.

Lecture, 1 hour; practice, 3 hours; 1st and 2d terms. Credit 2.

Voc. Ed. 105: Methods in Vocational Agriculture—A study of the teaching of secondary vocational agricultural subjects, stressing particularly the purposes of such instruction, the selection, organization and presentation of subject matter and the organization of project activities. Prereq. Voc. Ed. 103.

Lectures, 3 hours; 3d term. Credit 3.

Voc. Ed. 106: Observation and Methods—A continuation of Voc. Ed. 104, stressing particularly methods used in the presentation of agricultural subjects in secondary schools. This course must parallel Voc. Ed. 105. Prereq. Voc. Ed. 104.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

Voc. Ed. 107: Methods in Vocational Agriculture—A continuation of Voc. Ed. 105, emphasizing particularly organization of subject matter, equipment, text-books and community relationships. Prereq. Voc. Ed. 105.

Practice, 6 hours; 1st and 2d terms. Credit 2.

Voc. Ed. 108: Supervised Teaching and Observation—Each student in this course is expected to spend at least one term, five periods a week or

*Observation work is in every case in charge of the instructor offering the courses which such work parallels.

its equivalent as a junior teacher of vocational agriculture and serve as an assistant to a supervising teacher in charge of this subject in a secondary school. During the term in which the student does his supervised teaching he is expected to assume a few other obligations. During the terms in which he is not teaching the student must continue observation work and attend the conferences held for the benefit of junior teachers. Open only to seniors. Credit depends upon the amount and character of work done. An average of three hours per term for the year may be allowed.

Voc. Ed. 109: Problems in Secondary Education—A study of the problems and responsibilities of the secondary school, stressing particularly the history and development of vocational education. Prereq. Voc. Ed. 107.

Lectures, 2 hours; 3d term. Credit 2.

Graduate Work

Voc. Ed. 201: Problems in Agricultural Education—A study of historical and administrative phases of agricultural education, types of schools and systems of supervision. Credit depends upon amount and character of work done.

HOME ECONOMICS EDUCATION

Voc. Ed. 110: Methods in Home Economics Education—A study of the teaching of secondary home economic subjects, stressing particularly the purposes of such instruction and the selection, organization and presentation of subject matter. Prereq. Voc. Ed. 103.

Lectures, 3 hours; 3d term. Credit 3.

Voc. Ed. 111: Observation and Methods—A continuation of Voc. Ed. 104, stressing particularly the methods used in the presentation of home economic subjects. This course must parallel Voc. Ed. 110. Prereq. Voc. Ed. 104.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

Voc. Ed. 112: Methods in Home Economics Education—A continuation of Voc. Ed. 110, emphasizing particularly organization of subject matter, equipment, text-books and community relationships. Prereq. Voc. Ed. 110.

Practice, 6 hours; 1st and 2d terms. Credit 2.

Voc. Ed. 113: Supervised Teaching and Observation—Each student in this course is expected to spend at least one term, five periods a week or its equivalent as a junior teacher in home economics and serve as an assistant to a supervising teacher in charge of this subject in a secondary school. During the term in which the student does this teaching she is expected to assume a few other obligations. During the term in which she is not teaching she must continue observation work and attend the conferences held for the benefit of junior teachers. Open only to seniors. Credit depends upon the amount of work done. An average of three hours per term for the year may be allowed.

GOVERNMENT

Gov. 101: Federal, State and Municipal Government—This course deals with institutions and functions of the State and is adapted to the needs of those desiring to gain an insight into the responsibilities of citizenship.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms. Credit 6.

Gov. 102: Business Law—This course deals with the common legal aspects of ordinary business transactions and is planned to give to the student a sense of the occasions when he should consult a lawyer for guidance to avoid making legal mistakes, rather than any feeling that he is competent to dispense with legal advice.

Lectures and recitations, 2 hours; 1st and 2d terms. Credit 4.

Gov. 103: Public Finance—This course is complimentary to the study of government and deals with the revenue and budgetory systems of public bodies—Federal, State and local.

Lectures and recitations, 2 hours; 1st and 2d terms. Credit 4.

Gov. 104: Law of Contracts and Specifications—A course in business law arranged for students in engineering, dealing primarily with covenants and specifications.

Lectures and recitations, 2 hours; 2d and 3d terms. Credit 4.

Gov. 1: Federal, State and Municipal Government—A course parallel with Gov. 101, arranged for students in the two-year agricultural course.

Lectures and recitations, 3 hours; 1st term.

Gov. 2: Business Law—A course parallel with Gov. 102 arranged for students in the two-year agricultural course.

Lectures and recitations, 3 hours; 2d term.

HISTORY

Hist. 101: European Industrial History—This course deals with a study of the economic and social causes underlying the "break up" of the Roman Empire and the succeeding industrial changes to 1776, stressing particularly the rise of England as an industrial nation.

Lectures and recitations, 4 hours; 1st term. Credit 4.

Hist. 102: Industrial and Economic History of the United States—A study of the industrial and economic development of the United States from the Colonial period to 1861.

Lectures and recitations, 4 hours; 2d term. Credit 4.

Hist. 103: Comparative Industrial and Economic History—A study of the industrial development of the leading nations of the world from 1861 to the present time.

Lectures and recitations, 4 hours; 3d term. Credit 4.

Hist. 104: Studies in Modern and Contemporary History—A course dealing with the history of modern States from 1850 to the present time.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms. Credit 2.

Hist. 105: History of Agriculture—A course dealing with the development of farming as an industry from the period of origin to the period of skill and scientific management.

Lectures and recitations, 3 hours; 2d term. Credit 3.

RURAL ECONOMICS

R. Ec. 101: Principles of Economics—A basal course embracing a study of the economic principles underlying the phenomena of consumption, production, distribution, co-operation and business organization.

Lectures, 3 hours; 1st and 2d terms. Credit 3.

R. Ec. 102: Problems in Rural Economics—A study of the economic adaptations and adjustment necessary on the part of the agriculturist to meet the changing economic conditions. Population flows, land tenure, farm incomes, farm labor, agricultural credit and price movements will receive special consideration. Prereq. R. Ec. 101.

Lectures and recitations, 3 hours; 3d term. Credit 3.

R. Ec. 103: Elements of Community Study—A course dealing with the fundamental principles of community development.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms. Credit 2.

R. Ec. 104: Principles of Rural Organization—A study of the historical and comparative development of farmers' co-operative organizations, stressing particularly present tendencies.

Lectures and recitations, 3 hours; 1st term. Credit 3.

R. Ec. 105: Markets and the Marketing of Farm Products—An analysis of the present system of transporting, storing and distributing farm products as a basis for intelligent direction of effort in increasing the efficiency of marketing methods. Prereq. R. Ec. 101.

Lectures and recitations, 3 hours; 2d term. Credit 3.

R. Ec. 106: Co-operative Marketing—A study of the co-operative marketing, endeavors of farmers with a view to developing methods of distributing perishable and specialized farm products. Prereq. R. Ec. 101 and R. Ec. 105.

Lectures and recitations, 3 hours; 3d term. Credit 3.

R. Ec. 107: Community Study—A course dealing with a study of the history and structure of rural communities, stressing particularly relationships and needs.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms. Credit 2.

R. Ec. 108: Farm Accounting—A study of the principles underlying farm accounting, emphasizing cost accounting and analysis of farm business.

Lectures and recitations, 3 hours; practice, 3 hours; 1st term. Credit 4.

R. Ec. 109: Farm Management—A study of the business of farming from the standpoint of the individual farmer. This course aims to connect the principles and practice which the student has acquired in the

several technical courses and to apply them to the development of a successful farm business.

Lectures and recitations, 3 hours; practice, 3 hours; 2d and 3d terms. Credit 4.

R. Ec. 1: Farm Management—A course parallel with R. Ec. 109 arranged for students in the two-year agricultural curriculum.

Lectures and recitations, 2 hours; practice, 2 hours; 1st term.

R. Ec. 2: Farm Accounting—A course parallel with R. Ec. 108 arranged for students in the two-year agricultural curriculum.

Lectures and recitations, 2 hours; 2d term.

R. Ec. 3: Rural Organization—A survey of the functions, scope and present forms of organization of rural interests primarily for economic purposes.

Lectures and recitations, 2 hours; 3d term.

SUPERVISED TEACHING

The supervised teaching required in courses numbered Vocational Education 108 and Vocational Education 111 is in charge of the individual at the head of this department, supervising teachers, professors of special methods in vocational agriculture and home economics and the principal in charge of the high school in which such work is conducted.

It is the duty of the head of the department of supervised teaching to arrange in consultation with the supervising teachers and the principal the details involved in the administration of the practical work of students engaged as junior teachers, assume responsibility for the prompt fulfillment of duties on the part of a student acting in such capacity, and safeguard the interests of such students as individuals engaged in training for a State teacher's certificate. It is the duty of a supervising teacher to assume entire responsibility for the instruction of the pupils enrolled in the secondary courses for which he is responsible, supervise the lesson plans and classroom teaching of the junior teachers under him, and assist in every way possible in the training and development of students in such service. It is the duty of a professor of special methods to keep in close touch with the work of the supervising teachers in his field, study the development of students as junior teachers and assist supervising teachers in their work with such

students. It is the duty of the principal to maintain the school as a school, safeguard the interests of the pupils and endeavor to develop within the school the best that modern secondary education has to offer.

The first aim of the courses in supervised teaching is to acquaint the student with the professional relations that ought to be considered in connection with the teaching of any subject in a high school. Plans are prepared for subsequent work in the classes of supervising teachers. Students failing during their regular period of supervised teaching to display essential qualifications for teaching are required to extend their periods of preparation under such arrangements as can be made for each individual case.

Note—Use of terms.

Pupil refers to one who has matriculated in a high school in which supervised teaching is done.

Student refers to the college student in training for a State teacher's certificate.

Teacher refers to any person regularly teaching in a high school. Teachers may be of two classes—supervising and junior. A supervising teacher is an individual having entire charge of a secondary course in which students may be enrolled for supervised teaching. A junior teacher is a student who acts as an assistant to a supervising teacher and is enrolled for supervised teaching.

Professor of Special Methods refers to a professor of special professional courses in education, as Professor of Agricultural Education, Professor of Home Economics Education, etc.

Principal refers to the principal of the high school in which supervised teaching is done.

Division of Home Economics

ANNOUNCEMENT

A recent act of the Maryland Legislature made possible th establishment of the Division of Home Economics. Thi division will be able to enroll a limited number of students b October 1, 1918. As this catalogue goes to press but few o the instructors have been selected for the work. Sufficien basic courses, however, are outlined to enable prospective stu dents and their agents to gain an idea of the character of th instruction which the College proposes to inaugurate.

FOREWORD

The Division of Home Economics offers opportunity to pre pare for home making and home economics teaching. Th courses given will include fundamental training which wil enable the student to prepare for such professional service a interior decorating, dressmaking, millinery and managing o serving as a dietition in a private home, institutional household hospital, school or college dormitory with a small amount o specialized training. On account of the demand for traine teachers of home economics and the limited dormitory space students will be accepted only in the curriculum preparing fo teaching. This curriculum is offered in co-operation with th Division of Vocational Education.

HOME ECONOMICS EDUCATION

The special entrance requirements of the Home Economic Education curriculum are stated in the description of this cur riculum under the Division of Vocational Education.

HOME ECONOMICS EDUCATION

SUBJECT.	TERM.		
FRESHMAN YEAR.	I	II	III
English	3	3	
Public Spaking	1	1	1
Chemistry	3(3)	3(3)	2(6)
Zoology 101 and 102—General Zoology	2(6)	2(6)	
Botany 101—General Botany			2(6)
Vocational Education 101—Freshman Lectures	1	1	1
Home Economics 101—Drawing and Design	4		
Home Economics 102—Textiles		4	
Home Economics 103—Elementary Dressmaking			4
Physical Training	1	1	1
SOPHOMORE YEAR.			
Organic Chemistry	4		
Physiology	4		
Bacteriology and Public Health		4	4
Elements of Community Study	2	2	2
Home Economics 104—Food Study and Cooking	4	4	
Home Economics 105—Dressmaking		4	
Home Economics 106—Dietetics			4
Physical Training	1	1	1
Elective	3	3	7
JUNIOR YEAR.			
English	2	2	2
Home Economics 107—Advanced Design	2	2	
Home Economics 108—Home Care of the Sick	2		
Home Economics 109—Nutrition		5	5
Vocational Education 102—Principles of Teaching	3		
Vocational Education 103—Educational Psychology		3	
Vocational Education 104—Observation and Methods	1(3)	1(3)	
Vocational Education 110—Methods in Home Economics			3
Vocational Education 111—Observation and Methods			1(3)
Elective	6	3	5
SENIOR YEAR.			
Rural Economics 101—Principles of Economics	3	3	
Home Economics 110—Clothing		3	3
Home Economics 111—Home Equipment	3	3	
Home Economics 112—Home Management			5
Vocational Education 112—Methods in Home Economics Education	(6)	(6)	
Vocational Education 113—Supervised Teaching and Observation	5	1(3)	1(3)
Vocational Education 109—Problems in Secondary Education			2
Elective	4	4	5

DESCRIPTION OF COURSES

H. Ec. 101: Drawing and Design—A study of the principles of design as applied to clothing and house furnishing.

First term. Credit 4.

H. Ec. 102: Textiles—A study of the structure and properties of textiles and fabrics and their use in clothing and household furnishings.

Second term. Credit 4.

H. Ec. 103-c: Dressmaking—A course giving practice in the cutting and making of simple garments and dresses from washable materials.

Third term. Credit 4.

H. Ec. 104-a-b: Food Study, Cookery and Elementary Dietetics—A course including a study of food principles in relation to their composition, sources, and value in the body; of dietaries; cost in relation to the family budget; and practice in preparation and serving of meals.

First and second terms. Credit 4.

H. Ec. 105: Dressmaking—This course includes a study of quality, suitability, and cost of materials and practice in constructing simple wool and silk dresses.

Second term. Credit 4.

H. Ec. 106: Dietetics—A study of the fundamental principles of human nutrition and the application of these principles to the feeding of individuals, families, and larger groups under varying physiological and economic conditions.

Third term. Credit 4.

H. Ec. 107: Advanced Design—A study of the development of art and ornament in relation to modern styles in articles of clothing and house furnishings, so treated that students may recognize what is appropriate and beautiful.

First and second terms. Credit 2.

H. Ec. 108: Home Care of the Sick—A study of the transmission and prevention of communicable diseases; first aid; hygiene of infancy; maidenhood, maturity; and home nursing.

First term. Credit 2.

H. Ec. 109: Nutrition—A physiological and chemical study of human nutrition.

Second and third terms. Credit 5.

H. Ec. 110: Clothing—A study of family clothing problems, stressing particularly needs and cost in relation to the clothing budget. Problems in modeling and construction.

Second and third terms. Credit 3.

H. Ec. 111: Home Equipment—A study of house sites; architecture; floor plans, building materials; details of construction; heating plants, ventilation, lighting, plumbing; water supply, furniture, pictures, and hangings from the point of view of the home-maker with various sums at her command.

First and second terms. Credit 3.

H. Ec. 112: Home Management—A course including instruction in family budget making, for varying incomes and for larger groups; household accounts; and practice as manager and helper in a household.

Third term. Credit 5.

For description of home economics education courses see Division of Vocational Education.

Division of Language and Literature

OFFICERS OF INSTRUCTION

H. SPENCE.....Dean of Division and Professor of Modern Language.
S. RICHARDSON.....Professor of English and Public Speaking.
I. REED.....Professor of English Literature.
F. KRAMER, JR.....Instructor in Modern Language.

INTRODUCTION

Instruction in the English language and literature is indispensable to complete training. There is no more practical branch of study than that which teaches the student to avoid the ordinary errors, to regard the laws of correct usage and good taste, and to express his thoughts in a clear, easy and effective manner. This can be accomplished only by systematic instruction which stresses precept, practice and example. Consequently, all composition courses prescribe, in addition to rhetorical theory, extensive writing of themes and constant attention to the methods of the masters of English prose.

Training, however, is not complete without some knowledge of the noblest thoughts of the greatest minds. These are preserved in the masterpieces of literature. To study the classics is to come under their influence; hence a survey of English literature permits acquaintance with and inculcates habits of sound and painstaking scholarship.

MODERN LANGUAGE

This department embraces the study of three branches—French, German and Spanish. Instruction is open to students for one, two or three years. The work offered is similar to that of the more advanced agricultural colleges, and when certified by this department is accepted at full credit by the larger universities of the country.

The instruction in French and German is intended—first, to enable students who expect to engage in investigation to translate and to understand foreign scientific contributions which have not been rendered into English; second, to foster and to train the mind for accurate and logical methods of reasoning; and third, to clarify and simplify technical and applied English, giving the student a more thorough and comprehensive appreciation of his own language.

The recent political and commercial history of our country has caused a knowledge of the Spanish language to be wholly desirable. Consequently the instruction given herein is practical, laying the foundations for the spoken and written use of the language.

DESCRIPTION OF SUBJECTS OFFERED

For convenience and ease in reference, the instruction is arranged alphabetically.

ENGLISH COMPOSITION

Eng. 101: Composition, Rhetoric and Readings in English Prose—This course aims to train the student in clear, economic, forceful thought-transmission. Constant application of the principles of good writing in constructive composition is required. Daily exercises and twelve essays are written during the year.

Recitations, 3 hours; practice, 1 hour; 1st, 2d and 3d terms. Credit 10.

Eng. 102: Advanced Composition—Research work and practical composition on general and technical subjects.

Recitations, 2 hours; 1st, 2d and 3d terms. Credit 6.

Eng. 103: Technical and Advanced General Composition—Writing for newspapers and magazines. Commercial correspondence. Bulletin writing. The technical departments of the College co-operate with the English department in offering this course. Required of all students other than engineers.

Practice, 1 hour; 1st, 2d and 3d terms. Credit 3.

Eng. 104: Lectures on Technical Composition—Practice in technical composition. Criticism and correction of compositions in the classroom. This course is entirely practical. Required of all engineering students.

Practice, 2 hours; 1st, 2d and 3d terms. Credit 2.

Eng. 105: Advanced Lectures on Technical Composition—Theme subjects are offered by the department in which the student's major work

s done. The larger portion of the work is done in the classroom. Re-
uired of all engineering students. Elective for non-engineers.
Practice, 2 hours; 1st, 2d and 3d terms. Credit 2.

Eng. 1: Rhetoric and Composition—A study of the principles of rhetoric nd composition, especially adapted to the needs of the students in the ractical courses. A thorough study is made of the business letter, the ewspaper report, and the advertisement; all of which are illustrated by nodels taken from the best current literature.
Lectures and recitations, 2 hours, 1st and 3d terms; 3 hours, 2d term.

Eng. 2: Farm Literature—A comprehensive study of the farm maga-ine; Federal and State Experiment Station bulletins; reports of agri-ultural associations, granges and agricultural colleges. The object is o make the student familiar with the literature of his vocation. The tudent is engouraged to secure for himself a working library. Frequent isits to the College Library and to the Library of Congress serve to amiliarze the student wth the practical workings of the modern library.
Practice, 2 hours; 1st, 2d and 3d terms.

Eng. 3: Technical Literature—This course is a continuation of Eng. 1 nd 2, with special emphasis upon the technical literature of the science f farming.
Lectures and recitations, 2 hours; 1st and 2d terms.

Eng. 4: English—Review of grammar and composition based upon work aken in the mechanic arts course.
Recitations, 3 hours; 1st, 2d and 3d terms.

Eng. 5: English and Themes—A reading course in engineering periodi-als and theme writing relative to engineering subjects.
Recitations, 4 hours; 3d term.

ENGLISH LITERATURE

Eng. Lit. 101: A Survey of English Literature—A general survey by ypes of the development of English literature. Historical outline given y lectures. Intensive study in class of representative masterpieces of ach type. Collateral readings. Elective.
Recitations, 2 hours; 1st, 2d and 3d terms. Credit 6.

Eng. Lit. 102: The Novel and the Essay—Each student will read a umber of works of fiction and prepare written critiques. A few model ovels are studied critically in the class. Lectures on the historical de-elopment of the English novel. Reading of the leading nineteenth cen-ury essayists; lectures and reports. Elective.
Recitations, 2 hours; 1st, 2d and 3d terms. Credit 6.

Eng. Lit. 103: The Drama—The origin of the English drama; early opular plays; predecessors of Shakespeare; Shakespeare and his con-emporaries; the Restoration and eighteenth century drama; the modern rama. Lectures on the history, and the critical study of the plays of ach period. Extensive collateral reading. Elective.
Recitations, 4 hours; 1st, 2d and 3d terms. Credit 6.

FRENCH

Fr. 101: Elementary French—Drill in pronunciation, elements of gram mar, conversation, simple composition, reading, and translation.

Recitations, 4 hours; 1st, 2d and 3d terms. Credit 12.

Fr. 102: Second-Year French—Grammar continued. Drill on pronoun and irregular verbs. Composition, dictation, conversation, sight-readin and translation. Prereq. Fr. 101.

Recitations, 3 hours; 1st, 2d and 3d terms. Credit 9.

Fr. 103: Advanced French—Reading and translation of scientific text and periodicals. Original and dictated reproductions of the texts. Prereq Fr. 102.

Recitations, 3 hours; 1st, 2d and 3d terms.

Fr. 104: Double French—A combination of Fr. 101 and Fr. 102. Dril upon the essentials of grammar. Oral exercises and composition. Stud of texts from the very beginning of the course. Practice in translatio at sight. Much attention is given to the use of good English in th translation.

Recitations, 5 hours; 1st, 2d and 3d terms. Credit 15.

GERMAN

Ger. 101: Beginning German—Drill on pronunciation, elements o grammar, conversation, dictation, reading, and translation.

Recitations, 4 hours; 1st, 2d and 3d terms. Credit 12.

Ger. 102: Second-Year German—Grammar continued. Drill in pros composition, reproduction, and conversation. Sight-reading and translation. Pereq. Ger. 101.

Recitation, 3 hours; 1st, 2d and 3d terms. Credit 9.

Ger. 103: Third-Year German—Reading and translation of scientific texts and periodicals. Prepared and extemporary reproductions of the text. Prereq. Ger. 102.

Recitations, 3 hours; 1st, 2d and 3d terms. Credit 9.

Ger. 104: Double German—A combination of Ger. 101 and Ger. 102. Drill upon the foundations of grammar. Conversation and written composition. Early reading of texts. Sight-reading. Oral and written reproductions.

Recitations, 5 hours; 1st, 2d and 3d terms. Credit 15.

PUBLIC SPEAKING

P. S. 101: Elements of Public Speaking—Reading, declamation, original speeches, debates.

Practice, 2 hours; 1st, 2d and 3d terms. Credit 2.

P. S. 102: Public Speaking—Realization and expression of thought. The art of debate. Original speeches on general and technical subjects.

Recitation, 1 hour; 1st, 2d and 3d terms. Credit 3.

P. S. 103: **Advanced Public Speaking**—Preparation and delivery of peeches on general and technical subjects. Argumentation and formal ebate. Required of all students other than engineers.

Recitation, 1 hour; 1st, 2d and 3d terms. Credit 3.

P. S. 104: **Technical Public Speaking**—Preparation and delivery of peeches on technical subjects; the subjects being offered by the Divi- ion of Engineering. Required of engineering students.

Practice, 1 hour; 1st, 2d and 3d terms. Credit 1.

P. S. 105: **General Advanced Public Speaking**—Continuation of P. S. 03 and P. S. 104. Elective.

Recitation, 1 hour; 1st, 2d and 3d terms. Credit 3.

P. S. 106: **Advanced Technical Public Speaking**—Continuation of P. S. 04. Required of engineering students.

Practice, 1 hour; 1st, 2d and 3d terms. Credit 1.

SPANISH

Sp. 101: **Elementary Spanish**—Drill in the elements of Spanish gram- nar, pronunciation, simple composition, reading, and translation.

Recitations, 4 hours; 1st, 2d and 3d terms. Credit 12.

Sp. 102: **Second-Year Spanish**—Grammar, conversation, composition ontinued. Reading and translation. Prereq. Sp. 101.

Recitations, 3 hours; 1st, 2d and 3d terms. Credit 9.

Sp. 103: **Double Spanish**—A combination of Sp. 101 and Sp. 102. Drill upon the elements of grammar. Oral exercises and written composition. Study of texts from the beginning of the course. Practice in reading and translation at sight. Conversation. Reproductions from texts read.

Recitations, 5 hours; 1st, 2d and 3d terms. Credit 15.

TWO-YEAR COURSE IN ENGINEERING

The object of the course is to prepare men for positions of responsibility in lines of work in which training in mechanic arts is necessary. There is a special need for such men at all times and particularly in time of war. The course affords an excellent opportunity for training to such persons as find it impossible for any reason to enter any of the four-year courses in engineering. A certificate is granted to each student who satisfactorily completes the course. The first year of the course is devoted to the laying of a foundation in shop mathematics, physics and English, as well as in drawing and shop work. In the second year most of the time is devoted to subjects closely related to mechanical and electrical engineering,

the student selecting the branch in which he thinks he may use his talents to the greatest advantage.

Throughout the course emphasis is laid on the necessity for turning out work in the drafting room, shop and field which will meet the requirements of the commercial work. The student is taught that a task worth doing at all is worth doing well and that the finished product from the hand, brains, or both, must not only pass inspection, but be better than the average if one wishes to succeed. Parallel with the practical work instruction is given in the fundamentals upon which practice is based. Thus the head and hand are brought into that intimate and harmonious relation so necessary to the normal development of the individual engaged in any industrial pursuit.

Among the positions which the course equips a man to fill may be noted the following: Tracers, draftsmen, linemen, station operators, assistants in various branches related to engineering, salesmen for different kinds of machinery, and assistant foremen.

To enter the course a student must have completed at least the equivalent of the seventh grade in the Maryland public schools and be not less than 16 years of age.

The tabulated curriculum of the course follows. It gives the outline of the work in both its mechanical and electrical aspects:

TWO-YEAR ENGINEERING

SUBJECT.	TERM.		
FIRST YEAR.	I	II	III
Mathematics 1, 2 and 3—Shop Mathematics	4	4	3
Physics 1—Elementary Physics	3(3)	3(3)	3(3)
English 4	3	3	3
Mechanical Engineering 3—Technical Instruction	2	2	2
Drawing 2—Mechanical Drawing	(6)	(6)	(6)
*Drawing 3—Freehand Drawing			(6)
Shop 3—Carpentry	(6)		
Shop 4—Advanced Wood Work			(3)
Shop 5—Blacksmithing		(6)	
*Shop 6—Foundry			(6)
Military Instruction 101—Basic Course	1(2)	1(2)	1(2)
SECOND YEAR.			
Mathematics 4 and 5—Shop Mathematics	4	4	
Military Instruction 102—Basic Course	1(2)	1(2)	1(2)
OPTION IN MECHANICS.			
Mathematics 6—Estimates and Costs			4
English 3—English and Themes			3
Mechanical Engineering 4—Heat Engines	4		
Mechanical Engineering 5—Technical Mechanics	4	4	4
Electrical Engineering 2—Direct Current		3(3)	
Shop 7 and 8—Machine Work	(6)	(9)	
Shop 9—Shop Work			(9)
Machine Design 1—Machine Drafting	(6)	(6)	(6)
Experimental Laboratory 1			3
Mechanical Engineering 6—Power Plant Operation	(3)		
OPTION IN ELECTRICITY.			
Electrical Engineering 1—Direct Current	2(3)	2(3)	
Electrical Engineering 2—Alternating Currents			4(3)
Electrical Engineering 4—Illuminations		2(3)	
Electrical Engineering 5—Power Plants		2	2
Electrical Engineering 6—Telephones and Telegraphs			3(3)
Electrical Engineering 7—Batteries	2(3)		
Electrical Engineering 8—Measuring Instruments	2(3)		
Electrical Engineering 9—Equipment Repairs		1(3)	
Electrical Engineering 10—Switchboards			2
Electrical Engineering 11—Interior Wiring	2(6)	2(3)	
Electrical Engineering 12—Outside Lines			1(6)
Shop 10—Machine Work			(3)

*Students electing option in mechanics take foundry; others take freehand drawing.

TWO-YEAR AGRICULTURAL COURSE

The Two-Year Agricultural Course embraces much of the technical work of the four-year courses and is designed to lay a foundation that will secure success in practical farming. It is planned especially to meet the demands of young men who cannot find time to take the regular courses of the College, or for those who have not had the necessary educational requirements for admission to the longer courses.

Among the most enthusiastic students who have taken the course and give it their hearty endorsement are some of the landowners and best farmers of Maryland. The course is made practical in every sense of the word, and for that reason students having farm experience before entering will derive most benefit from the work. Those taking the course who do not live on home farms are required to spend at least ten weeks between the first and second years on a farm approved by the College.

It is advisable for students to carry on project work where possible. College authorities are always available to supervise such projects, and when satisfactorily carried out credit may be given for the work. Look for a list of projects under the Short Course in Agricultural Practice.

The two-year course has the advantage of being given during the same months that the regular College courses are given. The students can enter into all phases of athletics and other student activities.

To enter the two-year course the applicant must have preparation at least equal to the work given in the seventh grade of the Maryland public schools.

At the conclusion of the course students having completed the regular work as outlined are given a certificate stating the studies pursued during the time spent in the College.

OUTLINE OF COURSES

SUBJECT.	TERM.		
FIRST YEAR.	I	II	III
Agronomy 1—Cereal Crops	2(2)		
Agronomy 2—Forage Crops			2(2)
Soils 1—General Soils			2(2)
Animal Husbandry 1—Breeds and Judging Live Stock	2(2)		
Animal Husbandry 2—Dairying		2(2)	
Animal Husbandry 3—Feeds and Feeding			2(2)
Chemistry 1—Agricultural Chemistry	2(3)	3(3)	
Pomology 1—Elementary Pomology	2(2)		
Landscape and Floriculture 1—Plant Propagation		1(2)	
Vegetable Gardening 1—Home Vegetable Gardening		1(2)	2(2)
Botany 1—General Botany	2(2)		
Zoology 1—Entomology		2(2)	
Zoology 2—Sprays and Spraying			2(3)
Drawing 1—Farm Drawing	(3)		
Shop 1—Farm Wood Work		(3)	
Shop 2—Forging and Pipe Fitting			(3)
English 1—Composition	2	3	2
English 2—Farm Literature	(2)	(2)	(2)
Military Instruction	1(2)	1(2)	1(2)
SECOND YEAR.			
Agronomy 3—Grain Judging		(2)	
Animal Husbandry 4—Breeding of Animals	2		
Animal Husbandry 5—Disease of Animals		2(2)	
Animal Husbandry 6—Farm Poultry			2(3)
Economics 1—Farm Management	2(2)		
Economics 2—Farm Accounts		2	
Economics 3—Rural Organization			2
Economics 4—Business Law		3	
Soils 2—Fertilizers	2(2)		
Botany 2—Plant Diseases	2(2)		
General Science 1—Bacteriology		1(3)	
Forestry 1—Farm Forestry			2(3)
Structural Design 1—Farm Buildings	1(3)		
Mechanical Engineering 1—Farm Machinery		1(3)	
Hydraulics 1—Drainage			2(6)
English 3	2	2	2
Military Instruction	1(2)	1(2)	1(2)
Elect one or a portion of each:			
Agronomy 4—Advanced Agronomy	2(4)	2(3)	3(4)
Animal Husbandry 7—Animal Industry	2(4)	2(3)	3(4)
Horticulture—Vegetable Gardening 5 or Pomology 2 or Floriculture	2(4)	2(3)	3(4)
Mechanical Engineering 2—Gas Engines			2(3)
Zoology 3—Beekeeping			(3)

SHORT COURSE IN AGRICULTURAL PRACTICES

(Three Years of Three Months Each—December, January and February)

There has been a long-felt need for an agricultural course for the rural men and women that will not take them away from the farm during the greater part of the growing season. There never has been a time when it is more necessary that the

farmers of this country produce maximum crops. For these reasons a new course in agriculture has been initiated which will take the farmer away from his home work only three winter months—December, January and February—when he is least needed on the farm.

The short course is organized entirely from the practical point of view. The content embodied deals largely with farm-crop production, vegetable gardening, pomology, animal industries and mechanics. The methods employed show the new ways of handling old problems and the best ways to increase production with the least possible expense.

This course should appeal to men who are actually up and doing and who want to render greater service to their country by preparing to meet new conditions on the farm. It should make farm life more interesting, pleasant and profitable. One big feature is that this course affords an opportunity to come shoulder to shoulder with a multitude of splendid young men of Maryland and other States.

Although this course has hardly been announced as yet, several students have already registered for the work. The only requirement for admission is a common school education. A high school education will be very helpful, and the course is planned so that it is elastic enough to fit students with various degrees of training.

Permission is given for students to elect largely subjects pertaining to their own interest. If the plan outlined is followed, all students will take the general work during the first year and then elect their special work during the second and third years. Each year should make a unit so that a student who can attend only one or two years will still have a rounded course. Special supervised project work is offered for all who want to keep in touch with the College during the summer.

At the suggestion of students, college specialists go to the home farms to ascertain what the greatest difficulties are and then lay plans for the correction. A list of projects to select from is given elsewhere.

Students who have completed the regular work as outlined and have carried supervised project work through two sum-

ers are given a certificate stating the studies pursued while egistered at the College.

Registration for this course will take place on Monday, ecember 2. The term will close on Friday, February 28. hose who expect to attend should request the authorities to end registration blanks as early in the year as possible.

OUTLINE OF COURSES

FIRST YEAR.

gronomy 1 and 3—Cereal Crop Production and Grain Judging	2(2)
nimal Husbandry 1—Breeds and Judging of Live Stock	2(2)
nimal Husbandry 2—Dairying	2(2)
egetable Gardening 1—Home Vegetable Gardening	2(2)
omology 1	2(2)
hop 1 and 2—Wood Work, Forging and Pipe Fitting	(3)
upervised Farm Project for Summer Months.	
lective (elect one):	
Chemistry 1—Agricultural Chemistry	2(2)
English 1 and 2—Composition and Farm Literature	3

SECOND YEAR.

gronomy 2—Forage Crops	2(2)
nimal Husbandry 3—Feeds and Feeding of Live Stock	2(2)
Mechanical Engineering 1—Farm Machinery	1(3)
oology 2—Sprays and Spraying	1(2)
oils 2—Fertilizers	2
conomics 2—Farm Accounts	2
upervised Farm Project During Summer Months.	
lective (elect enough to make a normal schedule):	
Botany 2—Plant Diseases	1(2)
Zoology 1—Entomology	1(2)
Vegetable Gardening 2—Commercial Vegetable Gardening	2(2)
Pomology 2—Practical Fruit Growing	2(2)
Animal Husbandry 6—Farm Poultry	2(2)
Rural Economics 4—Business Law	2
Soils 1—General Soils	2(2)

THIRD YEAR.

Animal Husbandry 5—Animal Diseases	2
Rural Economics 1—Farm Management	2(2)
Hydraulics 1—Drainage	(3)
Rural Economics 3—Rural Organization	2
General Science 1—Bacteriology	1(3)
Elective (elect enough to make a normal schedule):	
Agronomy 4—Advanced Agronomy	3(4)
Animal Husbandry 7—Animal Industry	3(4)
Vegetable Gardening 5—Advanced Vegetable Gardening	3(4)
Pomology 2—Practical Fruit Growing	3(4)
Mechanical Engineering 3—Gas Engines	2(3)
Structural Design 1—Farm Buildings	1(3)
Zoology 3—Bee keeping	(3)

FARM PROJECTS

To entirely satisfy the requirements of the Short Course in Agricultural Practice, students who are working for certificates are required to carry out farm projects between the first and second years and between the second and third years.

Students are at liberty to invite College specialists to their home farms to point out the difficulties which may be used as farm projects, or they may select a project from the list.

The work will be supervised and inspected by the department in which the project has been chosen. The following are projects submitted by the various departments:

FIELD CROPS

1. Field selection of seed corn.
2. Ear-to-row test of corn.
3. Variety test of corn.
4. Methods of cultivating corn.
5. Rate and date of planting corn.
6. Variety tests of wheat.
7. Rate and date of seeding wheat.
8. Inoculation tests for legumes.
9. Effect of lime on legumes.
10. Time of havesting alfalfa.
11. Effect of legumes upon succeeding crops.
12. Collection and identification of tame and wild grasses and weeds and noting their commercial value or detriment.
13. Effect of fertilizers upon common crops.
14. A survey of the home farm from the standpoint of soil texture, drainage, and productivity of the various soil types.
15. Preparation of seed bed.

HORTICULTURE

1. Thinning apples.
2. Fertilizers for apple orchards.
3. Controlling diseases of orchards.
4. Making old orchards productive.
5. The pruning of fruit trees.
6. Cultural methods and disease and insect ravages.
7. Do strawberries pay as a commercial crop?
8. The cost of disease and insect control in orchards.
9. Ideal home vegetable gardening.

10. Potato culture.
11. Varieties of tomatoes.
12. Spray tomatoes *vs.* non-sprayed.
13. Beautifying the home grounds.

ANIMAL HUSBANDRY

1. Hog feeding.
2. District survey of pure bred stock.
3. Cost of feeding dairy cattle.
4. Sheep management.
5. Rationing work horses.
6. Cost of fattening cattle.
7. Selling of cream *vs.* home butter making.
8. Liberal feeding *vs.* conservation feeding of dairy cattle.
9. Profits from improved rations.
10. Profitable methods of feeding dairy calves.
11. Home cheese making.
12. The most profitable poultry flock.
13. Feeding for egg production.
14. Feeding and milking records of dairy cattle.
15. Cost of feeding horses.
16. Lamb raising.

FARM FORESTRY

1. Survey of wood lots.
2. Planting trees for farm use.
3. Germination of seeds of forest trees.
4. Rate of growth of trees.
5. Diseases of wood lots.

RURAL ECONOMICS

1. Types of farming.
2. Methods of operating farm lands.
3. A system of farm accounting and records.
4. Relation of farm equipment to the size of the farm.
5. Survey of farm practices.
6. Rural organization.

AGRICULTURAL ENGINEERING

1. Design and construction of farm buildings.
2. Laying out and installing a drainage system.
3. The draft of farm implements.
4 Design and installation of modern farm home conveniences.
5. The use and handling of cement and concrete.

DEGREES CONFERRED MAY 30, 1917

HONORARY

DOCTOR OF SCIENCE

WILLIAM W. SKINNER.....Montgomery County, Md.
H. G. SHIRLEY.....Baltimore County, Md.

MASTER OF SCIENCE

JAMES JESSIE THOMAS GRAHAM.....Prince George's County, Md
HARLEY D. DRAKE.....Washington, D. C.
EMMA S. JACOBS.....Washington, D. C.

IN COURSE

BACHELOR OF SCIENCE

Agricultural Education

HORACE BENNETT DERRICK.....Takoma Park, D. C.
DOWELL JENNINGS HOWARD.....Brookeville, Md.
WILLIAM MORSE KISHPAUGH.....Harrisburg, Pa.
HENRY REESE SHOEMAKER.....Ashton, Md.
HOWARD BARR WINANT.....Washington, D. C.

Animal Husbandry

ROY S. DEARSTYNE.....Port Chester, N. Y.
BERNARD DUBEL.....Baltimore, Md.
WILLIAM ANDREW GEMENY.....Bozman, Md.
WALTER FORTUNATUS GILPIN.....Lanham, Md.
WILLIAM DORSEY GRAY.....Prince Frederick, Md.
FREDERICK L. THOMSEN.....Hyattsville, Md.
RODERICK DOWS WATSON.....Welcome, Md.

Horticulture

LOREN BURRITT.....Washington, D. C.
HARRY WAITE FRISTOE.....Baltimore, Md.
CHARLES HENRY FUCHS.....Port Chester, N. Y.
CHALES LOUIS LARSEN.....Long Island, N. Y.

Chemistry

JOHN DONNETT.....Baltimore, Md.
CLARENCE GERVASE DONOVAN.....Washington, D. C.
FERDINAND ANDREW KORFF.....Baltimore, Md.
PRESTON M. NASH.....Washington, D. C.

Civil Engineering

IRVING COGGINS.....Washington, D. C.
SEYMOUR WILLIAM RUFF.....Roslyn, Md.
HARRY SMITH.....Arlington, Md.
CLYDE COOPER TARBUTTON.....Crumpton, Md.
ALBERT VAUGH WILLIAMS.....Nanticoke, Md.

Electrical Engineering

JOHN ALBERT BROMLEY.....Silver Spring, Md.
LYMAN DANIEL OBERLIN.....Washington, D. C.
ALBERT HALL SELLMAN.....Stockton, Md.

Mechanical Engineering

BERNARD FREDERICK SENART.....Washington, D. C.

Biology

GALEN MILLER STURGIS.

General Science

LEMUEL ALDEN HASLUP.....Annapolis Junction, Md.

CERTIFICATES IN TWO-YEAR COURSES ISSUED MAY 30, 1917

Agriculture

HOMER FRANKLIN BIBLE.....College Park, Md.
OLIN LEECH BEALL.....Beltsville, Md.
WILLIAM LEROY FRAZEE.....Old Town, Md.
JAMES MONROE MCCORMICK.....Bel Air, Md.
JAMES WILMER STEVENS.....Baltimore, Md.
OSCAR TRAIL.....Easton, Md.
JOSEPH STANISLAUS WASNEY.....Washington, D. C.
EARLINGTON JACOB WAYBRIGHT.....Littlestown, Pa.

Horticulture

JOSEPH FRANCIS BECKER.....Washington, D. C.
ALFRED JAMES BARRETT.....Rome, Italy.
ANDREW JACKSON BOYD.....Washington, D. C.
KING BEARDSLEY HOLLYDAY.....Norfolk, Va.
JAMES MANO SWARTZ.....Baltimore, Md.

TESTIMONIALS OF MERIT AWARDED MAY 30, 1917

For distinguished achievement in the promotion of the agricultural interests of Maryland:
ALEXANDER M. FULFORD, Harford County, Md.
JAMES R. GALBREATH, Harford County, Md.

MEDALS AND PRIZES AWARDED MAY 30, 1917.

For excellence in the Agricultural Education Course, offered by the College:
H. R. SHOEMAKER, Montgomery County, Md.

For excellence in the Animal Husbandry Course, offered by the College:
R. S. DEARSTYNE, Port Chester, N. Y.

Honorable Mention:
W. F. GILPIN, Prince George's County, Md.

For excellence in the Chemical Course, offered by the College:
C. G. DONOVAN, Washington, D. C.

For excellence in the Civil Engineering Course, offered by the College:
C. C. TARBUTTON, Queen Anne's County, Md.

For excellence in the Electrical Engineering Course, offered by the College:
A. H. SELLMAN, Washington, D. C.

For excellence in the Two-Year Course in Agriculture, offered by the College:
E. J. WAYBRIGHT, Littlestown, Pa.

For excellence in the Two-Year Course in Horticulture, offered by the College:
J. M. SWARTZ, Baltimore, Md.

For excellence in Debate, offered by the Alumni Association:
M. D. ENGLE, Montgomery County, Md.

The Goddard Medal for excellence in Scholarship and Moral Character, offered by Mrs. Annie K. Goddard James:
W. F. GILPIN, Prince George's County, Md.

The William Pinkney Whyte Medal for excellence in Oratory, offered by Isaac Lobe Straus, Esq.
M. D. ENGLE, Montgomery County, Md.

"President's Cup" for excellence in Debate, offered by Dr. H. J. Patterson:
New Mercer Literary Society.

BATTALION ORGANIZATION

The enlistment of students and the appointment of students to Officers raining Camps necessited the reduction of the Battalion from three to wo companies, after January 1, 1918.

BATTALION STAFF

. M. HAIG.....Major.
V. H. CARROLL.....First Lieutenant and Adjutant.
. S. KANN.....Second Lieutenant and Quartermaster.
I. S. BERLIN.....Sergeant Major.

COMPANY OFFICERS AND NON-COMMISSIONED OFFICERS

COMPANY "A"	COMPANY "B"
Captains	
W. V. CUTLER	M. A. PYLE
First Lieutenants	
F. C. BRIMER	J. P. JONES
Second Lieutenants	
M. J. B. EZEKIEL	R. W. ARTHUR
J. H. REMSBERG	E. L. WILDE
First Sergeants	
G. W. NORRIS	M. C. BROWN
Quartermaster Sergeants	
W. F. MORNHINWEG	R. W. AXT
Sergeants	
J. L. AITCHESON	G. W. CLENDANIEL
R. R. LEWIS	E. M. SAWYER
W. P. HICKS	K. W. BABCOCK
Corporals	
C. E. PAINE	E. W. HAND
J. W. STEVENS	A. N. PRATT
K. C. POSEY	P. E. CLARK
C. F. BLETCH	J. H. STARR
H. MCDONALD	W. F. STERLING
F. A. DAWSON	M. T. RIGGS

ROSTER OF MATRICULATES

Session 1917-18

GRADUATE STUDENTS

Name.	*Postoffice.*	*County.*
ANSPON, B. W.	College Park	Prince George's.
BALLARD, W. R.	Hyattsville	Prince George's.
FOX, E. F.	Hagerstown	Washington.
JARRELL, T. R.	College Park	Prince George's.
LEATHERS, C. E.	Cambridge	Dorchester.
JORDAN, S. F.	College Park	Prince George's.
MCCONNELL, H. S.	College Park	Prince George's.
NICKELS, C. B.	Starkville	*Mississippi.*
PFINGSTAG, V. R.	Hudson	*Illinois.*
YOSHIKAWA, MASAO.	Japan	*Japan.*

SENIOR CLASS

BACON, C. H.	Silver Spring	Montgomery.
BRIMER, F. C.	Stockton	Worcester.
CARROLL, W. H.	Ashland	Baltimore.
CLARK, P. E.	La Plata	Charles.
CUTLER, W. V.	Washington	*District of Columbia.*
DAVISON, B.	Riverdale	Prince George's.
DAY, F. D.	Boyd's	Montgomery.
EPPLEY, G. F.	Washington	*District of Columbia.*
EYRE, R. S.	Highland	Howard.
EZEKIEL, M. J. B.	Hyattsville	Prince George's.
GRIGG, W. K.	Port Chester	*New York.*
HAIG, F. M.	Riverdale	Prince George's.
HORN, P. V.	Mt. Airy	Carroll.
JONES, J. P.	Davidsonville	Anne Arundel.
KANN, R. S.	Pittsburgh	*Pennsylvania.*
PYLE, M. A.	Baltimore	*Baltimore City.*
REMSBURG, J. H.	Middletown	Frederick.
WILDE, E. L.	Washington	*District of Columbia.*

JUNIOR CLASS

AITCHESON, J. L.	Burtonville	Montgomery.
AXT, R. W.	Baltimore	*Baltimore City.*
BABCOCK, K. W.	Hagerstown	Washington.
BERLIN, H. S.	Baltimore	*Baltimore City.*
BLETSCH, C. F.	Mt. Rainier	Prince George's.
BROWN, M. C.	Sparrows Point	Baltimore.

Name.	*Postoffice.*	*County.*
BUELL, A. C.	Washington	*District of Columbia.*
CHEN, C. C.	Shanghai	*China.*
CHICHESTER, F. S.	Aquasco	Prince George's.
CLARK, G. S.	Ellicott City	Howard.
COSTER, H. O.	Coster	Calvert.
CRUM, P. E.	Harmony Grove	Frederick.
DOWNIN, T. V.	Williamsport	Washington.
DUVALL, W. H.	Croome	Prince George's.
GLEASON, R. W.	Washington	*District of Columbia.*
GUTBERLET, I. W.	Baltimore	*Baltimore City.*
HAND, E. W.	Berwyn	Prince George's.
HICKS, W. P.	Govans	Baltimore.
HIPPLE, B. G.	Marietta	*Pennsylvania.*
LEWIS, R. R.	Frederick	Frederick.
MCLEAN, D. L.	Baltimore	*Baltimore City.*
MILLER, E. V.	Hagerstown	Washington.
MORNHINWEG, W. F.	Port Chester	*New York.*
NORRIS, G. W.	College Park	Prince George's.
PAINE, C. E.	Washington	*District of Columbia.*
PERKINS, H. T.	Springfield	Prince George's.
POSEY, K. C.	La Plata	Charles.
PRATT, A. N.	Hackensack	*New Jersey.*
SAWYER, E. M.	College Park	Prince George's.
SELLMAN, R. L.	Beltsville	Prince George's.
SEWELL, M. D.	Hyattsville	Prince George's.
SIEGERT, L. L.	Galloway's	Anne Arundel.
SMITH, J. E.	Galloway's	Anne Arundel.
STARR, J. H.	Westcver	Somerset.
STEVENS, J. W.	Baltimore	*Baltimore City.*

SOPHOMORE CLASS

ADY, E. B.	Sharon	Harford.
ATKINSON, W. F.	Washington	*District of Columbia.*
AUSTIN, J. A.	Blackshear	*Georgia.*
BARTON, J. H.	Centreville	Queen Anne's.
BAURMAN, W. M.	Washington	*District of Columbia.*
BISSELL, T. L.	Westover	Somerset.
CARROLL, H. M.	Baltimore	Baltimore City.
DAWSON, E. E.	Trappe	Talbot.
DAWSON, F. A.	Washington	*District of Columbia.*
DIGGS, A. C.	Baltimore	*Baltimore City.*
DINGMAN, J. E.	Berwyn	Prince George's.
DRAWBAUGH, J. R.	Washington	*District of Columbia.*
ETIENNE, A. D.	Berwyn	Prince George's.

Name.	*Postoffice.*	*County.*
Ezekiel, W. N.	Hyattsville	Prince George's.
Fletcher, A. E.	Erie	*Pennsylvania.*
Gray, J. A.	Brownsville	Washington.
Hamill, F. J.	Baltimore	*Baltimore City.*
Hockman, G. B.	Hagerstown	Washington.
Hodgins, R. J.	Union City	*Pennsylvania.*
Hook, Elizabeth G.	Baltimore	*Baltimore City.*
Jones, A. S.	Washington	*District of Columbia.*
Keefauver, J. E.	Berwyn	Prince George's.
Knode, J. S.	Martinsburg	*West Virginia.*
Knode, R. T.	Martinsburg	*West Virginia.*
Lambdin, F. F.	Annapolis	Anne Arundel.
Langrall, J. H.	Baltimore	*Baltimore City.*
Lawson, E. W.	Crisfield	Somerset.
MacDonald, A.	Washington	*District of Columbia.*
Morgan, J. A.	Lonaconing	Allegany.
Mornhinweg, E. S.	Port Chester	*New York.*
Riggs, M. T.	Rockville	Montgomery.
Ruppert, E. E.	Washington	*District of Columbia.*
Sterling, W. F.	Crisfield	Somerset.
Sturgis, H. L.	Hyattsville	Prince George's.
Sullivan, J. H.	Newburyport	*Massachusetts.*
Taylor, E. G.	Wishart's	*Virginia.*

FRESHMAN CLASS

Bland, Harriett W.	Sparks	Baltimore.
Blumberg, M. D.	New York	*New York.*
Brundage, W. R.	Port Chester	*New York.*
Caldwell, D. R.	Washington	*District of Columbia.*
Cole, C. W.	Towson	Baltimore.
Donaldson, E. C.	Laurel	Prine George's.
Eiseman, J. H.	Washington	*District of Columbia.*
Ford, S. W.	Upper Fairmount	Somerset.
Frere, F. J.	Tompkinsville	Charles.
Fuchs, J.	Port Chester	*New York.*
Gardner, W. T.	Clear Spring	Washington.
Graham, J. R.	Barclay	Queen Anne's.
Grimm, W. H.	Stanley	*Virginia.*
Groten, T. C.	Pocomoke City	Worcester.
Hamke, J. C.	Rockville	Montgomery.
Heller, R. W.	Annapolis	Anne Arundel.
Higgins, E. W.	Mardela Springs	Wicomico.
Holter, C. K.	Jefferson	Frederick.
Holter, E. F.	Middletown	Frederick.

Name.	*Postoffice.*	*County.*
JESTER, W. C.	Wilmington	*Delaware.*
KELLAM, D. C.	Shady Side	*Virginia.*
MARQUIS, T. E.	Washington	*District of Columbia.*
NELSON, G. V.	Newport News	*Virginia.*
NEUMAN, A.	Washington	*District of Columbia.*
PEDDICORD, H. R.	Dickerson	Montgomery.
PERRY, D. P.	Clear Spring	Washington.
POWELL, E. W.	Princess Anne	Somerset.
RAKEMANN, H. C.	Washington	*District of Columbia.*
RAUSCH, R. M.	Baltimore	*Baltimore City.*
REINMUTH, O.	Frederick	Frederick.
ROBERTS, F.	Berwyn	Prince George's
ROCKWELL, P. H.	Collington	Prince George's.
SALISBURY, A. W.	Ridgely	Caroline.
SCHEUCH, J. D.	Washington	*District of Columbia.*
SENER, H. H.	Chewsville	Washington.
SILBERMAN, H. A.	Washington	*District of Columbia.*
SLANKER, F.	Washington	*District of Columbia.*
SMITH, J. W.	Arlington	Baltimore.
SNYDER, L. W.	Washington	*District of Columbia.*
SPANGLER, G. W.	Chanute	*Kansas.*
STARKEY, E. B.	Sudlersville	Queen Anne's.
STEPHENSON, P. R.	College Park	Prince George's
STONE, R., JR.	Annapolis	Anne Arundel.
STONESTREET, N. V.	Rock Point	Charles.
STUBBS, J. S.	Charles Town	*West Virginia.*
THAWLEY, L. H.	Laurel	Prince George's.
THOMAS, R. B.	Washington	*District of Columbia.*
THOMAS, W. P.	Jefferson	Frederick.
TRACHTENBERG, I.	Brooklyn	*New York.*
TWILLEY, O. S.	Hurlock	Dorchester.
WALKER, W. P.	Mt. Airy	Carroll.
WESTCOTT, C. W.	Atlantic City	*New Jersey.*
WHITE, H. N.	Princess Anne	Somerset.
WILHELM, C. P.	Arlington	Baltimore.

SUB-FRESHMAN CLASS

BOYER, O. H.	Perryman	Harford.
DARNALL, C. E.	Hyattsville	Prince George's.
DUVALL, W. N.	Baltimore	*Baltimore City.*
EZEKIEL, BERTHA B.	Hyattsville	Prince George's.
HUGG, J. A.	Baltimore	*Baltimore City.*
MCCENEY, R. S.	Silver Spring	Prince George's.
MORGAN, P. T.	Arlington	Baltimore.

Name.	*Postoffice.*	*County.*
ORBAN, F. J.	Baltimore	*Baltimore City.*
OWINGS, E. P.	Chesapeake Beach	Calvert.
SCOTT, J. G.	Princess Anne	Somerset.
SILVER, G. B.	Havre de Grace	Harford.
SWARTZ, A. N.	Washington	*District of Columbia.*
WOODS, H. E.	Washington	*District of Columbia.*
WRIGHT, J. R.	Baltimore	*Baltimore City.*

SECOND-YEAR AGRICULTURAL CLASS

BREADY, G. A.	Herndon	*Virginia.*
FORREST, R.	Rockville	Montgomery.
SCHULTE, H. H.	Newark	*New Jersey.*
SCRIBNER, A. M.	Philadelphia	*Pennsylvania.*
VAUX, CHARLOTTE A.	Washington	*District of Columbia.*
WEAVER, H.	Greensboro	Caroline.
WILMER, H. R.	Faulkner	Charles.

FIRST-YEAR AGRICULTURAL CLASS

CORKRAN, E. B.	Rhodesdale	Dorchester.
DONOVAN, C. A.	Washington	*District of Columbia.*
FROELICH, E.	Crisfield	Somerset.
GRIFFIN, N. E.	Washington	*District of Columbia.*
HOLDER, T. D.	Vienna	Dorchester.
JOH, R.	Violetville	Baltimore.
MENZEL, K. F.	Washington	*District of Columbia.*
NEVITT, L. H.	Washington	*District of Columbia.*
QUAINTANCE, H. W.	Washington	*District of Columbia.*
RICHARDSON, P. S.	Williamsburg	Dorchester.
SAUNDERS, H. R.	Washington	*District of Columbia.*
SHEPHERD, J. H.	Branchville	Prince George's.
TAWES, W. I.	Crisfield	Somerset.
UMBARGER, H. L.	Bel Air	Harford.
WHITE, J. N.	Upper Marlboro	Prince George's.
YOUNG, C. H.	Aquasco	Prince George's.

UNCLASSIFIED

ARTHUR, R. W.	Havre de Grace	Harford.
CLENDANIEL, G. W.	Kennedyville	Kent.
COPPAGE, H. S.	Church Hill	Queen Anne's.
HALL, F. B.	Charles Town	*West Virginia.*
HARDISTY, W. R.	Seabrook	Prince George's.
HOLMES, GRACE	Takoma Park	*District of Columbia.*
MCDONALD, H. M.	Barton	Allegany.

Name.	*Postoffice.*	*County.*
MERRILL, G. M.	Crisfield	Somerset.
PERRIE, A. L.	College Park	Prince George's.
LAKEMANN, F. B.	Washington	*District of Columbia.*
LAYBAUD, E. R.	Washington	*District of Columbia.*
RICH, M. N.	Washington	*District of Columbia.*
SMITH, P. H.	Philadelphia	*Pennsylvania.*
UMHAU, CHRISTINE.	Washington	*District of Columbia.*
VALLS, H. R.	Church Hill	Queen Anne's.
VISEMAN, K. B.	Pittsburgh	*Pennsylvania.*

STUDENTS IN THE SUMMER SCHOOL

ADAMS, A. C.	Bristol	*Tennessee.*
ALBRITTAIN, LOUISE.	La Plata	Charles.
ALLEE, HELEN.	Cumberland	Allegany.
BAITY, EARL.	Highland	Harford.
BALDWIN, ELIZABETH.	Washington	*District of Columbia.*
BARNES, MARY.	La Plata	Charles.
BENSON, HILDA.	Brookeville	Montgomery.
BERRY, ELOISE.	Berry	Charles.
BIGGS, IRMA.	Frederick	Frederick.
BRENT, EUGENIA.	Waldorf	Charles.
BRINKMAN, BLANCHE.	Belle Grove	Allegany.
BROOKHANK, U. N.	Riceville	Charles.
BUXTON, ELAINE.	Govans	Baltimore.
CANTER, GRACE.	Hughesville	Charles.
CHESELDINE, CARRIE.	Palmer's	St Mary's.
CLARKE, EDITH.	California	St Mary's.
CLARKE, ELIZABETH.	Annapolis Junction	Anne Arundel.
COPLEY, I. C. (Mrs.)	Washington	*District of Columbia.*
COVER, BLANCHE.	New Windsor	Carroll.
CRAMER, BLANCHE (Mrs.)	Silver Spring	Montgomery.
CREEK, CLARA.	Hancock	Washington.
CROFT, LORENA.	Port Tobacco	Charles.
CROMWELL, FLOYD.	Walkersville	Frederick.
CZARRA, SIGMUNDA.	Hyattsville	Prince George's.
DARNER, DAISY.	Jefferson	Frederick.
DAVIS, DOROTHY.	Chaptico	St. Mary's.
DENT, NELLIE.	Oakley	St. Mary's.
DEVILBISS, EDNA.	Mt. Airy	Frederick.
DIETZ, GEORGE.	Baltimore	*Baltimore City.*
DUBEL, OMER.	Myersville	Frederick.
EWELL, GOLDIE.	Compton	St. Mary's.
EZEKIEL, BERTHA.	Hyattsville	Prince George's.
FELLOWS, MEREDITH.	Takoma Park	*District of Columbia.*

Name.	*Postoffice.*	*County.*
FITZGERALD, MARGUERITE	Washington	*District of Columbi*
FOGLE, ETHEL	Walkersville	Frederick.
FOGLE, HAZEL	Walkersville	Frederick.
FOX, ESTON	Hagerstown	Washington.
FREEMAN, EDNA	Berwyn	Prince George's.
FRERE, MARIE	Tompkinsville	Charles.
GALLAHAN, JESSIE	Brandywine	Prince George's.
GARDINER, CLARA	Indian Head	Charles.
GARDINER, MARY	Indian Head	Charles.
GARNER, MARY	Baden	Prince George's.
GIBBONS, ANNETTE	Hughesville	Charles.
GILBERT, MARY	Walkersville	Frederick.
GILLIS, VIOLA	Rockville	Montgomery.
GITTINGER, BLANCHE	Frederick	Frederick.
GOTTLIEB, FLORENCE	Annapolis	Anne Arundel.
GOTTLIEB, KATHRYN	Annapolis	Anne Arundel.
GRIFFITH, ALLEN	Berwyn	Prince George's.
GRIFFITH, MARY	Forestville	Prince George's.
GROVE, GRACE	Frederick	Frederick.
GULLETTE, LYDIA	Vienna	Dorchester.
GULLETTE, MARJORIE	Vienna	Dorchester.
GUYTHER, CLAUDIA	Piney Point	St. Mary's.
HACKETT, LAVADA	Vienna	Dorchester.
HALL, CLAUDIA	Germantown	Montgomery.
HARING, GLADYS	Cambridge	Dorchester.
HARRISON, ADALINA	Charlotte Hall	St. Mary's.
HARRISON, DORA	Charlotte Hall	St. Mary's.
HAWKINS, MARY	Millersville	Anne Arundel.
HAYDEN, PAULINE	Hollywood	St. Mary's.
HEARNE, MARY	Cambridge	Dorchester.
HOLLAND, LOIS	Clarksburg	Montgomery.
HOLMES, GRACE	Washington	*District of Columbia.*
HOLMES, NETTIE	Washington	*District of Columbia.*
HOOD, ELIZABETH	Mt. Airy	Carroll.
HOOK, ELIZABETH	College Park	Prince George's.
HOWARD, MARIAN	Brookeville	Montgomery.
HUNT, LULA	South River	Anne Arundel.
JACKSON, FRANKLIN	Washington	*District of Columbia.*
JARBOE, MAUDE	Mechanicsville	St. Mary's.
JONES, AGNES	Hughesville	Charles.
JONES, ANNA (Mrs.)	Thurmont	Frederick.
JOYCE, ADELE	Glen Burnie	Anne Arundel.
KEEFER, A. C	College Park	Prince George's.
KELLY, LILLIAN	Thurmont	Frederick.

Name.	*Postoffice.*	*County.*
KING, MARY	Tippett	Prince George's.
KLOSS, AUGUSTA	Hyattsville	Prince George's.
LAMSON, ELIZABETH	Washington	*District of Columbia.*
LAWRENCE, EULALIA	Abell	St. Mary's.
LEATHERS, C. E	College Park	Prince George's.
LERRIER, ELIZABETH	Washington	*District of Columbia.*
LINTHICUM, NANNIE	Annapolis	Anne Arundel.
LITTLE, FLORENCE	Hyattsville	Prince George's.
MARTIN, PAULINE	North Keys	Prince George's.
MATTHAEI, DORATHEA	Cumberland	Allegany.
MATTINGLY, ELIZABETH	Leonardtown	St. Mary's.
MAYHEW, RUTH	Mitchellville	Prince George's.
MCINTYRE, MARY	Branchville	Prince George's.
MEEKINS, ROXA	Fishing Creek	Dorchester.
MILBURN, ROSA	Maddox	St. Mary's.
MILLER, NETTIE	Mt. Airy	Frederick.
MILLS, MAUDE	Golden Hill	Dorchester.
MILLS, MILDRED	Golden Hill	Dorchester.
MONTGOMERY, HATTIE	Brookeville	Montgomery.
MORGAN, CARRIE	Millersville	Anne Arundel.
MORRIS, ADELAIDE	Faulkner	Charles.
MORRIS, LILLIAN	Faulkner	Charles.
NELSON, J. M. (Mrs.)	Madison	*Wisconsin.*
NICOLSON, ELLEN	Washington	*District of Columbia.*
OWENS, MARY	Pindell	Anne Arundel.
PATTERSON, BLANCHE	College Park	Prince George's.
PLOWDEN, NELL	Bushwood	St. Mary's.
PORTER, R. G	Hyattsville	Prince George's.
POWELL, DORA	Denton	Caroline.
PRELLER, MARY	Annapolis	Anne Arundel.
PUMPHREY, ESTHER	Germantown	Montgomery.
RAUSCH, ROBERT	Baltimore	*Baltimore City.*
REED, ELEANORA	Germantown	Montgomery.
RICE, ESTHER	Waterbury	Anne Arundel.
ROBINSON, M. E	Brightwood	*District of Columbia.*
RODERICK, MARGARET	Jefferson	Frederick.
ROGERS, ANNABELL	Hyattsville	Prince George's.
ROGERS, HARRIS	Hyattsville	Prince George's.
SHILDT, CHARLES	Taneytown	Carroll.
SHIPLEY, ISABEL	Annapolis	Anne Arundel.
SIBLEY, IRENE	Germantown	Montgomery.
SLAGLE, MARY	Jefferson	Frederick.
SLOAN, MARGUERITE	Hyattsville	Prince George's.
SMITH, NAOMI	Waldorf	Charles.

Name.	*Postoffice.*	*County.*
SMYTH, CAROLINE	Chestertown	Kent.
SOLLY, LAWRENCE	Washington	*District of Columbia*
STEWARD, MARY	Baltimore	*Baltimore City.*
THOMPSON, MABEL	Brandywine	Prince George's.
TOWNSEND, GRACE	Brookeville	Montgomery.
TUBMAN, MARIE	Golden Hill	Dorchester.
UMHAU, EMILY	Washington	*District of Columbia*
VEITCH, CAROLINE	College Park	Prince George's.
VEITCH, ISABEL	College Park	Prince George's.
WARTHEN, LOUISE	College Park	Prince George's.
WATSON, CLARA	Clinton	Prince George's.
WATSON, RUTH	Welcome	Charles.
WESTCAMP, MABEL	Clinton	Prince George's.
WILLS, LOUISE	Bel Alton	Charles.
WILSON, ELLEN	Westwood	Prince George's.
WILSON, MAHALA	Waterbury	Anne Arundel.
WISE, HILDA	Wayside	Charles.
WOODFIELD, MAGGIE	Galloway's	Anne Arundel.
WOODWARD, MILDRED	Washington	*District of Columbia*
WOOSTER, HELEN	College Park	Prince George's.
WRIGHT, LILLIAN (Mrs.)	Cambridge	Dorchester.

STUDENTS IN SHORT WINTER COURSES

AUSTIN, C. J. (Mrs.)	Elkton	Cecil.
BENSON, F. H. (Mrs.)	Berwyn	Prince George's.
BICKFORD, LULA (Mrs.)	Berwyn	Prince George's.
BROWN, A. E. (Mrs.)	Bedford	*Massachusetts.*
BURSCH, T. R. (Mrs.)	Berwyn	Prince George's.
CLAFLIN, ELOISE (Mrs.)	College Park	Prince George's.
CLOSE, MARGARET (Mrs.)	College Park	Prince George's.
CONNER, E. R. (Mrs.)	College Park	Prince George's.
DURNBAUGH, W. K. (Mrs.)	College Park	Prince George's.
EMERSON, E. E. (Mrs.)	Branchville	Prince George's.
EUWER, WALTER C	Upper Marlboro	Prince George's.
FINNELL, I. (Mrs.)	Berwyn	Prince George's.
FORRESTER, T. C	Frederick	Frederick.
GAHAN, WINIFRED	Berwyn	Prince George's.
GARDINER, J. U. (Mrs.)	Berwyn	Prince George's.
GARLOCK, EVA S. (Mrs.)	Pomonkey	Prince George's.
GILBERT, LEE E	Laurel	Prince George's.
GOWNLEY, H. S. (Mrs.)	Branchville	Prince George's.
HALLER, ELLEN (Mrs.)	Hagerstown	Washington.
HALLER, FREDERICK	Hagerstown	Washington.
HAMM, B. J. (Mrs.)	Berwyn	Prince George's.

Name.	*Postoffice.*	*County.*
ARTLEY, EDNA	Federalsburg	Caroline.
INES, CHARLES H	Frederick	Frederick.
IRNES, HORACE	Berlin	Wicomico.
INTHICUM, CHARLES	Clarksburg	Howard.
ARLOW, W. J. (Mrs.)	College Park	Prince George's.
CBATH, E. B. (Mrs.)	Riverdale	Prince George's.
CNAB, M. C	Upper Marlboro	Prince George's.
ILSTEAD, E. H. (Mrs.)	Washington	*District of Columbia.*
LMSTEAD, L. B. (Mrs.)	Anacostia	*District of Columbia.*
RTMAYER, LOUIS (Mrs.)	College Park	Prince George's.
ALMORE, NORA G. (Mrs.)	College Park	Prince George's.
AUL, HARRY (Mrs.)	Anacostia	*District of Columbia.*
OWER, ELMORE (Mrs.)	College Park	Prince George's.
URVIS, C. TAYLOR	Hudgins	*Virginia.*
ANCHENSTEIN, E. F. (Mrs.)	Washington	*District of Columbia.*
EILY, J. ROSS (Mrs.)	College Park	Prince George's.
OBY, H. (Mrs.)	Berwyn	Prince George's.
HEARER, J. J	Washington	*District of Columbia.*
HEPHERD, J. H	Branchville	Prince George's.
IMS, R. (Mrs.)	Branchville	Prince George's.
TEIN, C. H. (Mrs.)	Berwyn	Prince George's.
WARTZELL, F. F. (Mrs.)	Washington	*District of Columbia.*
ALIAFERRO, EMILY (Mrs.)	College Park	Prince George's.
VARNER, F. E	Keyser	*West Virginia.*
VEIGEL, EDNA A. (Mrs.)	Berwyn	Prince George's.
VILSON, SAMUEL C	Baltimore	*Baltimore City.*
VOOSTER, (Mrs.)	College Park	Prince George's.
AUX, ELLEN M. (Mrs.)	Washington	*District of Columbia.*
AUGHAN, C. H. (Mrs.)	Plattsburg	*New York.*

SUMMARY OF STUDENTS

Graduates	10
Seniors	18
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Second-Year Agricultural	7
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Summer School	142
Short Winter Courses	50
	398
Counted twice	6
Total	392

Any further information desired concerning the Maryland State College will be furnished upon application to DR. ALBERT F. WOODS, President.

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AUG 3 1920

OFFICIAL PUBLICATION
OF THE
University of Maryland

Vol. 17 JULY, 1920 No. 1

CATALOGUE

This volume is bound without _____
1919/20

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Containing general information concerning the University, Announcements for the Scholastic Year 1920-1921, and Records of 1919-1920

Issued monthly by the University of Maryland, at College Park, Md., as second-class matter, under Act of Congress of July 16, 1894.

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21

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CATALOGUE

1920—1921

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THE UNIVERSITY OF MARYLAND

CATALOGUE

1920—1921

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CALENDAR 1920, 1921, 1922

1920

JULY

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

AUGUST

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

SEPTEMBER

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

OCTOBER

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
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1921

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1922

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UNIVERSITY CALENDAR 1920-1921

FIRST TERM

Sept. 20–21, Monday–Tuesday.	Entrance and condition examinations. Registration days for old and new students.
Sept. 22, Wednesday	11:15 a. m. Assembly of student body; President's annual address. 1:20 p. m. All classes begin.
Sept. 24, Friday	President's reception for new students and presentation of Freshman Code.
Sept. 29, Wednesday	Last day for change of registration without fee; last day to register without payment of late registration fee.
Nov. 12, Second Friday in November	Freshman entertainment night.
Nov. 24, Wednesday, 12 m.	Thanksgiving recess begins.
Nov. 30, Tuesday, 8 a. m.	Thanksgiving recess ends.
Dec. 3, Second Friday after Thanksgiving	Football Dance.
Dec. 10, Friday	Presentation by Dramatic Club.
Dec. 15–22	Registration for second term.
Dec. 22, Wednesday, 11 a. m.	First term ends. Christmas vacation begins.

SECOND TERM

Jan. 4, Tuesday, 8 a. m.	Christmas vacation ends. Instruction for second term begins.
Jan. 11, Tuesday	Last day to change registration without fee and last day to register without late registration fee.
Feb. 4, First Friday in February	Intersociety debate.
Feb. 22, Tuesday	Washington's Birthday.

March 3, Thursday	Intercollegiate debate.
March 4, Friday	Inauguration Day. Holiday.
March 16–22	Registration for third term.
March 23, Wednesday, 12 m.	Second term ends. Easter recess begins.

THIRD TERM

March 29, Tuesday, 8 a. m.	Easter recess ends. Third term begins. All classes meet at scheduled time.
April 29, Last Friday in April	Annual contest of the Oratorical Association of Maryland colleges.
May 14, Saturday	All required theses must be presented.
May 21, Third Friday in May	May Ball.
May 30, Decoration Day	Farmers' Day.
June 3, Friday	Presentation by Dramatic Club.
June 6–10	Registration for first term 1921–1922.
June 11, Saturday	Student Organizations' Day.
June 12, Sunday	Beginning Commencement Exercises. Baccalaureate Sermon.
June 13, Monday	Class Day.
June 14, Tuesday	Alumni Day.
June 14, Tuesday, 9 p. m.–1 a m.	Commencement Ball.
June 15, Wednesday	Commencement Day.

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SAMUEL M. SHOEMAKER, *Chairman*.....Term expires 1925
Eccleston, Baltimore County

ROBERT CRAIN.....Term expires 1924
Mt. Victoria, Charles County

JOHN M. DENNIS, *Treasurer*.....Term expires 1923
Union Trust Co., Baltimore

DR. FRANK J. GOODNOW.....Term expires 1922
6 W. Madison St., Baltimore

JOHN E. RAINE.....Term expires 1921
413 E. Baltimore St., Baltimore

CHARLES C. GELDER.....Term expires 1929
Princess Anne, Somerset County

DR. W. W. SKINNER, *Secretary*.....Term expires 1928
Kensington, Montgomery County

B. JOHN BLACK.....Term expires 1927
Roslyn, Baltimore County

HENRY HOLZAPFEL.....Term expires 1926
Hagerstown, Washington County

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ROBERT CRAIN
DR. W. W. SKINNER

Experiment Station and Investigational Work:

B. JOHN BLACK, *Chairman*
DR. W. W. SKINNER
HENRY HOLZAPFEL, JR.

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ROBERT CRAIN, *Chairman*
B. JOHN BLACK
JOHN E. RAINE

Inspection and Control Work:

JOHN M. DENNIS, *Chairman*
HENRY HOLZAPFEL, JR.
CHARLES C. GELDER

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Dean of the College of Agriculture.

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Dean of the School of Engineering.

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Dean of the School of Liberal Arts.

J. M. H. ROWLAND, M. D.
Dean of the School of Medicine.

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Dean of the School of Law.

E. FRANK KELLY, Phar. D.
Dean of the School of Pharmacy.

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Dean of the School of Dentistry.

H. F. COTTERMAN, M. S.
Dean of the School of Education.

H. B. McDONNELL, M. S., M. D.
Dean of the School of Chemistry.

M. MARIE MOUNT, A. B.
Acting Dean of the School of Home Economics.

C. O. APPLEMAN, Ph. D.
Dean of the Graduate School.

H. J. PATTERSON, D. Sc.
Director of the Agricultural Experiment Station.

THOMAS B. SYMONS, M. S., D. Agr.
Director of the Extension Service.

*Absent on leave for government work in China.

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P. W. ZIMMERMAN, M. S., Dean.

THE SCHOOL OF ENGINEERING.
T. H. TALIAFERRO, C. E., Ph. D., Dean.

THE SCHOOL OF LIBERAL ARTS.
T. H. SPENCE, M. A., Acting Dean.

THE SCHOOL OF MEDICINE.
J. M. H. ROWLAND, M. D., Dean.

THE LAW SCHOOL.
HENRY D. HARLAN, L.L. D., Dean.

SCHOOL OF DENTISTRY.
T. O. HEATWOLE, M. D., D. D. S., Dean.

SCHOOL OF PHARMACY.
E. F. KELLY, Phar. D., Dean.

THE SCHOOL OF EDUCATION.
H. F. COTTERMAN, M. A., Dean.

THE SCHOOL OF CHEMISTRY.
H. B. McDONNELL, M. S., M. D., Dean.

THE SCHOOL OF HOME ECONOMICS.
M. MARIE MOUNT, A. B., Acting Dean.

THE GRADUATE SCHOOL.
C. O. APPLEMAN, Ph. D., Dean.

THE DEPARTMENT OF MILITARY SCIENCE AND TACTICS.
CAPT. GEORGE A. MATILE, U. S. A., Professor.

THE DEPARTMENT OF PHYSICAL EDUCATION AND RECREATION.
H. C. BYRD, B. S., Director.

THE SUMMER SCHOOL.
H. F. COTTERMAN, Director.

OFFICERS OF INSTRUCTION

ALBERT F. WOODS, M. A., D. Agr., President.

The order of the following names is that of seniority of office:

H. B. McDONNELL, M. S., M. D., Professor of Chemistry, State Chemist, Dean of School of Chemistry.

T. H. SPENCE, M. A., Professor of Modern Languages, Acting Dean of School of Liberal Arts.

W. T. L. TALIAFERRO, A. B., Sc. D., Professor of Farm Management.

J. B. S. NORTON, M. S., Professor of Mycology.

CHARLES S. RICHARDSON, M. A., Professor of Public Speaking and Extension Education.

HARRY GWINNER, M. E., Professor of Mechanical Engineering and Drawing, Superintendent of Shops.

T. H. TALIAFERRO, Ph. D., C. E., Professor of Civil Engineering and Mathematics, Dean of School of Engineering.

MYRON CREESE, B. S., E. E., Professor of Electrical Engineering and Physics.

E. N. CORY, M. S., Professor of Zoology, State Entomologist.

C. O. APPLEMAN, Ph. D., Professor of Plant Physiology, Dean of Graduate School.

L. B. BROUGHTON, M. S., Professor of General Chemistry.

H. C. BYRD, B. S., Assistant to the President and Director of Athletics.

C. E. TEMPLE, M. S., Professor of Plant Pathology.

J. E. METZGER, B. S., Professor of Agronomy.

O. C. BRUCE, B. S., Professor of Soils.

C. J. PIERSON, M. A., Professor of Vertebrate Morphology.

P. W. ZIMMERMAN, M. S., Professor of Plant Physiology and Ecology, Dean of College of Agriculture.

J. B. WENTZ, M. S., Professor of Farm Crops.

P. I. REED, M. A., Ph. D., Professor of the English Language and Literature.

A. G. McCALL, Ph. D., Professor of Geology and Soils.

R. C. REED, Ph. B., D. V. M., Professor of Animal Pathology, Dean of Division of Animal Industry.

H. F. COTTERMAN, B. S., M. A., Professor of Agricultural Education, Dean of School of Education.

J. A. GAMBLE, M. S., Professor of Dairy Husbandry.

E. M. PICKENS, D. V. S., M. S., Professor of Bacteriology and Animal Pathologist of the Biological and Live Stock Sanitary Laboratory.

DeVOE MEADE, Ph. D., Professor of Animal Husbandry.

E. C. AUCHTER, M. S., Professor of Horticulture.

M. MARIE MOUNT, B. A., Professor of Home and Institutional Management, Acting Dean of School of Home Economics.

E. B. McNAUGHTON, B. S., Professor of Home Economics Education.

R. WELLINGTON, M. S., Professor of Vegetable Gardening.

N. M. PROFFITT, Ph. B., Professor of Trade and Industrial Education.

NEIL E. GORDON, Ph. D., Professor of Physical Chemistry.

T. B. THOMPSON, Ph. D., Professor of Economics.

CAPT. GEORGE A. MATILE, U. S. A., Professor of Military Science and Tactics.

E. S. JOHNSTON, Ph. D., Associate Professor of Plant Physiology.

S. S. STEINBERG, B. E., C. E., Associate Professor of Civil Engineering.

G. J. SCHULZ, B. A., Assistant Professor of History.

L. J. HODGINS, B. S., Assistant Professor of Electrical Engineering and Physics.

C. F. KRAMER, M. A., Assistant Professor of Modern Language.

J. T. SPANN, B. S., Assistant Professor of Mathematics.

R. C. WILEY, B. S., Assistant Professor of Chemistry.

W. R. BALLARD, B. S., Assistant Professor of Pomology.

H. W. STINSON, B. S., Assistant Professor of Modern Languages.

H. B. HOSHALL, B. S., Assistant Professor of Mechanical Engineering.

A. S. THURSTON, M. S., Assistant Professor of Vegetable Gardening and Floriculture.

FRIEDA M. WIEGAND, B. A., Assistant Professor of Textiles and Clothing.

M. F. WELSH, D. V. M., Assistant Professor of Animal Pathology and Bacteriology.

H. D. McMURTRAY, B. S., Assistant Professor of Electrical Engineering and Physics.

F. W. BESLEY, B. A., Sc. D., Lecturer in Forestry, State Forester.

M. A. PYLE, B. S., Instructor in Engineering.

W. A. GRIFFITH, M. D., Instructor in Hygiene, College Physician.

MILTANNA ROWE, Instructor in Library Science, Librarian.

MRS. JANET THURSTON, Ph. B., Instructor in Textiles and Clothing, Foods and Cookery.

J. B. BLANDFORD, Instructor in Horticulture, Horticultural Superintendent.

R. V. TRUITT, B. S., Assistant in Entomology.

SGT. M. McMANUS, Assistant in Military Science and Tactics.

F. D. DAY, B. S., Assistant in Agricultural Education.

NOTE.—Faculties of the Schools of Medicine and Law and of the Schools of Pharmacy and Dentistry are given with the other information about those organizations.

AGRICULTURAL EXPERIMENT STATION STAFF

HARRY J. PATTERSON	Director and Chemist.
J. B. S. NORTON	Botany and Plant Pathology.
THOS. H. WHITE	Vegetable and Floriculture.
CHAS. O. APPLEMAN	Plant Physiology.
ROY H. WAITE	Poultry.
W. R. BALLARD	Small Fruits.
E. N. CORY	Entomology.
A. G. McCALL	Soils.
J. E. METZGER	Agronomy.
E. M. PICKENS	Animal Pathology.
E. C. AUCHTER	Pomology.
ALBERT WHITE	Supt. Ridgely Farm.
F. S. HOLMES	Seed Inspection.
R. WELLINGTON	Vegetable Breeding.
C. E. TEMPLE	Associate Plant Pathology.
E. S. JOHNSTON	" Plant Physiology.
O. C. BRUCE	" Soil Survey.
A. M. SMITH	" Soils.
R. S. ALLEN	Assistant, Swine Husbandry.
R. C. TOWLES	" Animal Husbandry.
GEO. R. STUNTZ	" Agronomy.
J. P. JONES	" Plant Physiology.
E. V. MILLER	" Plant Physiology.
C. B. NICKELS	" Entomology.
H. B. WINANT	" Soils.
J. ROY HAAG	" Soils.
E. H. PARFITT	" Biochemistry.
C. C. CHEN	" Plant Pathology.
C. C. HAMILTON	" Entomology.
ANNA M. HOOK	" Seed Inspection.
CLARA M. HODGINS	" " "
CAROLINE VEITCH	" " "

EXTENSION SERVICE STAFF

*THOMAS B. SYMONS, M. S., D. Agr., Director.
*F. B. BOMBERGER, B. S., A. M., D. S. C., Assistant Director and Specialist in Rural Organization and Marketing.
*T. E. McLAUGHLIN, B. S., District Agent and Specialist in Animal Industry.
*S. S. BUCKLEY, M. S., D. V. S., Specialist in Animal Husbandry.
*G. E. WOLCOTT, B. S., Specialist in Dairying.
S. B. SHAW, B. S., Specialist in Horticulture.
F. W. OLDENBURG, B. S., Specialist in Agronomy.
E. N. CORY, M. S., Specialist in Entomology.
C. E. TEMPLE, M. S., Specialist in Pathology.
H. W. RICKEY, Specialist in Poultry Husbandry.
C. L. OPPERMAN, Agricultural Editor.
E. C. AUCHTER, M. S., Specialist in Horticulture.
C. S. RICHARDSON, A. B., Specialist in Educational Extension.
*VENIA M. KELLAR, B. S., State Home Demonstration Agent.
R. W. WELLINGTON, M. S., Specialist in Vegetable Gardening.
C. B. NICKELS, B. S., Fellowship Assistant in Entomology.
*MARGARET SCHMIDT, B. S., *MABEL L. STEPHENSON, *OLA M. DAY (District Agents in Home Demonstration Work.)
*ADICE S. JONES, Specialist in Girls' Club WORK.
*E. G. JENKINS, State Boys' Club Agent.
*PETER CHICHESTER, Assistant Boys' Club Agent.

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*J. F. DAVIS, B. S	Dorchester	Cambridge
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*C. Z. KELLER, B. S	Somerset	Princess Anne
*E. P. WALLS, B. S., M. S	Talbot	Easton
*S. E. DAY, B. S	Washington	Hagerstown
*G. R. COBB, B. S	Wicomico	Salisbury
*E. I. OSWALD, B. S	Worcester	Snow Hill
*L. H. MARTIN (colored)	Eastern Shore	Princess Anne
*J. F. ARMSTRONG (colored)	Southern Maryland	Seat Pleasant

*In cooperation with the U. S. Dept. of Agriculture.

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*(Mrs.) GEORGIANA LINTHICUM	Anne Arundel	Annapolis
*(Miss) BERTHA IDE	Baltimore	Baltimore City
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*(Miss) SUE W. FRICK	Washington	Hagerstown
*(Miss) OLIVE C. MITCHELL	Wicomico	Salisbury
*(Miss) LUCY J. WALTER	Worcester	Snow Hill
*(Miss) LEAH D. WOODSON (colored)	Charles & St. Mary's	La Plata

CITY WORKERS.

Baltimore City	MRS. ADELAIDE DERRINGER.
Baltimore City	MISS GWYNNETH GMINDER.

*In cooperation with the U. S. Dept. of Agriculture.

STATE HORTICULTURAL DEPARTMENT

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E. N. CORY, State Entomologist.
C. E. TEMPLE, State Pathologist.
W. C. TRAVERS, Inspector.

STATE FERTILIZER WORK

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State Chemist.
L. B. BROUGHTON,
Assistant Chemist.
NEIL H. GORDON,
Assistant Chemist.
R. C. WILEY,
Assistant Chemist.
L. H. VANWORMER,
Assistant Chemist.
C. F. BLETSCH,
Assistant Chemist.
R. H. WALLS,
Assistant Chemist.
A. D. ETIENNE,
Assistant Chemist.
J. S. WHITBY,
Inspector.
CHARLES T. DAY,
Inspector.
J. S. SCARBOROUGH,
Inspector.

LIVE STOCK SANITATION

R. C. REED.....Chief, Animal Industry.
J. B. GEORGE.....Secretary.
E. M. PICKENS.....Pathologist, Live Stock Sanitary and Biologica Laboratory.
_____ Assistant.
D. R. HOFFMAN.....Veterinarian in Charge of Stock Yards.
G. H. GRAPP.....Veterinary Inspector.
*I. K. ATHERTON.....Inspector in Charge Hog Cholera Control.

FARM MANAGEMENT

G. A. BILLINGS.....Farm Management Investigator.

*In cooperation with the U. S. Dept. of Agriculture.

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ALUMNI.

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BUILDINGS.

MESSRS. CRISP, GWINNER, CREESE and PIERSON.

CATALOGUE, STUDENT ENROLLMENT AND ENTRANCE.

MESSRS. ZIMMERMAN, BYRD, SPENCE, COTTERMAN, CREESE, P. I. REED, BROUGHTON, HILLEGEIST and APPLEMAN.

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GROUNDS AND ROADS.

MESSRS. AUCHTER, THURSTON, CRISP, PATTERSON, STEINBERG and STUNTZ.

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SANITATION.

MESSRS. PICKENS, GRIFFITH, McDONNELL, W. T. L. TALIAFERRO, CORY, PYLE and MISS MOUNT.

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MESSRS. BYRD, CORY, BROUGHTON, SCHULZ, BOMBERGER and CLASS PRESIDENTS.

STUDENT PUBLICATIONS.

MESSRS. P. I. REED, BYRD, BOWERS and GAMBLE.

FARMERS' DAY.

MESSRS. PATTERSON, SYMONS and ZIMMERMAN.

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C. O. APPLEMAN, Dean of the Graduate School, Chairman, ex-officio.

E. S. JOHNSTON, Secretary.

DIRECTOR PATTERSON, PROFESSORS TALIAFERRO, CORY, REED, McCALL, MEADE and GORDON.

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H. C. BYRD, B. S., Assistant to the President.

MAUDE F. McKENNEY, Financial Secretary.

W. M. HILLEGEIST, Registrar.

ARTHUR M. SHIPLEY, M. D., Superintendent of Hospitals.

H. L. CRISP, M. M. E., Superintendent of Buildings.

MILTANNA ROWE, Librarian.

GENERAL INFORMATION

THE UNIVERSITY OF MARYLAND

Location

The University of Maryland is located at College Park in Prince George's County, Maryland, on the line of the Washington branch of the Baltimore and Ohio Railroad, eight miles from Washington and thirty-two miles from Baltimore. At least eight trains a day from each city stop at College station, thus making the place easily accessible from all parts of the State. Telephone connection is made with the Chesapeake and Potomac lines.

The grounds front on the Baltimore and Washington Boulevard. The suburban town of Hyattsville is two miles to the south, and Laurel, the largest town in the county, is ten miles to the north on the same road. Access to these towns and to Washington may be had by steam and electric railway. The site of the University is particularly beautiful. The buildings occupy the crest of a commanding hill, which is covered with forest trees and overlooks the entire surrounding country. In front, extending to the boulevard, is a broad rolling campus, the drill ground and athletic field. A quarter of a mile to the northeast are the buildings of the Agricultural Experiment Station. The farm of the College of Agriculture contains about 300 acres, and is devoted to fields, gardens, orchards, vineyard, poultry yards, etc., used for experimental purposes and demonstration work in agriculture and horticulture.

The general appearance of the grounds is exceedingly attractive. They are tastefully laid off in lawns and terraces which are ornamented with shrubbery and flower beds. The view from the grove and campus cannot be surpassed.

The location of the University is healthful; the sanitary conditions are excellent. No better proof of this can be given than that there has been practically no serious case of illness among the students for many years.

The Schools of Medicine, Pharmacy, Dentistry, and Law of the University are located in Baltimore at the corner of Lombard and Greene Streets.

History

The history of the present University of Maryland practically combines the histories of two institutions. It begins with the chartering of the College of Medicine of Maryland in Baltimore in 1807, which graduated its first class in 1810. In 1812 the institution was empowered to annex other departments and was by the same act "constituted an University by the name and under the title of the University of Maryland."

As such, its Law and Medical schools have since been especially prominent in the South and widely known throughout the country. The Medical School building in Baltimore, located at Lombard and Greene Streets, erected in 1814-1815 is the oldest structure in America devoted to medical teaching.

For more than a century the University of Maryland stood almost as organized in 1812, until an act of the last Legislature merged it with the Maryland State College, and changed the name of the Maryland State College to the University of Maryland. All the property formerly held by the old University of Maryland was turned over to the Board of Trustees of the Maryland State College, and the Board of Trustees will hereafter be known as the Board of Regents.

The Maryland State College first was chartered in 1856 under the name of the Maryland Agricultural College, the second agricultural college in the Western Hemisphere. For three years the College was under private management. In 1862 the Congress of the United States, recognizing the practical value and increasing need of such colleges, passed the Land Grant Act. This act granted each State and Territory that should claim its benefits a proportionate amount of unclaimed Western lands, in place of scrip, the proceeds from the sale of which should apply under certain conditions to the "endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." This grant was accepted by the General Assembly of Maryland. The Maryland Agricultural College was named as the beneficiary of the grant. Thus the College became, at least in part, a State institution. In the fall of 1914 its control was taken over entirely by the State. In 1916 the General Assembly granted a new charter to the College and made it the Maryland State College.

Under the new charter, which this year makes it a university, the institution is co-educational. Every power is granted necessary to develop an institution of higher learning and research, comparable to the great state universities of the West, in which Agriculture and Engineering hold a dominant place along with the Liberal Arts and professions. This is in full accord with the Morrill Act of the National Congress and the subsequent acts above referred to. This institution, therefore, becomes the representative of the State and the Nation in higher education and research. The charter provides that it shall receive and administer all existing grants from the national government and all future grants which may come to the State for this purpose.

EXTENSION AND RESEARCH

Agriculture and Home Economics

The agricultural and home economics extension service of the University, in co-operation with the United States Department of Agriculture, carries to the people of the State through practical demonstrations conducted by specialists of the College of Agriculture and county agents, the results of investigations in the fields of Agriculture and Home Economics. The organization consists of the administrative forces, including the director, assistant director, specialists and clerical force, the county agricultural demonstration agents, and the home demonstration agents in each county and in the chief cities of the State. The county agents and the specialists jointly carry on practical demonstrations under the several projects in the production of crops or in home-making, with the view of putting into practice on the farms of the State improved methods of Agriculture and Home Economics that have stood the test of investigation, experimentation, and experience. Movable schools are held in the several counties. At such schools the specialists discuss phases of Agriculture and Home Economics in which the people of the respective counties are specially interested.

The work of the Boys' Agricultural Clubs is of especial importance from an educational point of view. The specialists in charge of these projects, in co-operation with the county agricultural agents and the county school officers and teachers, organize the boys of the several communities of the county into agricultural clubs for the purpose of teaching them by actual practice the principles underlying agriculture. The boys hold regular meetings for the discussion of problems connected with their several projects and for the comparison of experiences. Prizes are offered for the stimulation of interest in the work.

The Home Economics specialists and agents organize the girls into clubs for the purpose of instructing them in the principles underlying canning, drying, preserving of fruits and vegetables, cooking, dressmaking and other forms of Home Economics work.

Educational value of the demonstrations, farmers' meetings, movable schools, clubs, and community shows is incalculable. They serve to carry the institution to the farmer and to the home-maker.

General Extension

This phase of the extension service of the University is conducted in cooperation with the United States Bureau of Education, and is intended to make the Liberal Arts and other branches of educational curriculum of greater service to the people of the State.

Agricultural Experiment Station

Vitally associated with the extension service is the experimental work in agriculture.

In 1847 an act was passed making provision for a State laboratory in which the application of chemistry to agriculture was to be undertaken. In 1858 experimentation was undertaken on the College farm. After two or three years this work was interrupted by the general financial distress of the time and by the Civil War. In 1888, under the provisions of the Hatch Act of the preceding year, the Agricultural Experiment Station was established.

This act states the object and purpose of the experiment station as follows:

That it shall be the object and duty of said Experiment Stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity or new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories.

Prior to the establishment of the experiment stations there was practically no agricultural science in this country. The work done by these institutions during the past quarter of a century has given a science of agriculture to teach, and laid a broad foundation for development.

The placing of agricultural demonstrations and extension work on a national basis has been the direct outgrowth of the work of the experiment station.

The students of the University, taking courses in the College of Agriculture, are kept in close touch with the investigations in progress.

The Eastern Branch

The Eastern Branch of the University of Maryland is located at Princess Anne, Somerset County. It is maintained for the education of negroes in agriculture and mechanic arts.

ADMINISTRATION

The government of the University is vested by law primarily in a Board of Regents, consisting of nine members appointed by the Governor for terms of nine years. The administration of the University is vested in the President. The University Council, composed of the President, the Assistant to the President, the Director of Agricultural Experiment Station, and Director of the Agricultural and Home Economics Extension Service, and the Deans, acts as an advisory board to the President on all phases of University work. The faculty of each college or school constitutes a faculty council which passes on all questions that have exclusive relationship to the unit represented.

Pending permanent coordination and reorganization of some departments, the following educational organizations are in effect:

College of Agriculture.
School of Engineering.
School of Liberal Arts.
School of Medicine.
The Law School
School of Dentistry.
School of Pharmacy.
School of Education.
School of Chemistry.
School of Home Economics.
The Graduate School.
The Summer School.
Department of Military Science and Tactics.
Department of Physical Education and Recreation.

The College of Agriculture offers curricula in: (1) General Agriculture; (2) Agronomy; (3) Botany; (4) Farm Management; (5) Geology and Soils; (6) Pomology; (7) Vegetable Gardening; (8) Floriculture; (9) Landscape Gardening; (10) Economic Zoology; (11) Pre-Medical; (12) Two-Year Agriculture; (13) Animal Husbandry.

The School of Chemistry offers curricula in: (1) General Chemistry; (2) Chemical Engineering; (3) Agricultural Chemistry; (4) Biological Chemistry.

The School of Education offers curricula in: (1) Agricultural Education; (2) Home Economics Education; (3) Industrial Education; (4) General Education.

The School of Engineering offers curricula in: (1) Civil Engineering; (2) Mechanical Engineering; (3) Electrical Engineering; (4) Highway Engineering; (5) Sanitary Engineering; (6) Two-Year Courses in Mechanic Arts.

The Graduate School offers courses in any of the subjects in which a graduate may desire to obtain advanced degrees. The Graduate School consists of all students taking graduate work in the various departments. Those qualified to supervise graduate work in the various departments will constitute the faculty of the Graduate School, presided over by a research specialist designated as Dean.

The School of Home Economics offers a curriculum in which may be obtained the general principles of home economics, a knowledge of home economics for teaching purposes, or a specialized knowledge of particular phases which deal with the work of the dietitian or institutional manager.

The School of Liberal Arts offers curricula with majors in: (1) Ancient Languages and Philosophy; (2) Economics; (3) English Language and Literature; (4) General Science; (5) History and Political Science; (6) Journalism; (7) French, German, or Spanish; (8) Public Speaking with reference to Special Professions; studies also are offered in Music and Library Science.

The Department of Military Science and Tactics has charge of the work of the Reserve Officers' Training Corps unit established by the War Department. During the first two years of the student's stay at the University he is required to take the Basic R. O. T. C. courses. During his junior and senior years he may elect three credit hours in Reserve Officers' Training Corps each term.

The Department of Physical Education and Recreation works in close co-operation with the military department and supervises all physical training, general recreation, and intercollegiate athletics.

The Summer School of six weeks offers courses in subjects given in any of the schools during the regular session of the University, with the exception of Medicine, Dentistry, Pharmacy, and Law, and in special subjects, such as school administration, classroom management and principles of secondary education for high school and elementary school teachers. Certain courses given in the Summer School are of collegiate grade and may be counted toward the bachelor's degree. Advanced courses may count toward the master's degree.

General matter having relationship to offerings of the School of Medicine and the Schools of Pharmacy and Dentistry, and the School of Law will be found elsewhere.

ADMISSION

Applicants for admission to the University must be at least sixteen years of age. Women are admitted to all courses and under the same conditions as men. Students may be admitted at any time, but should enter at the beginning of one of the three terms.

Students may be admitted by examination, or by certificate from an accredited high school or preparatory school, or by transfer from another institution.

In general the requirements for admission to the freshman class are the same as those prescribed for graduation by the approved high schools of Maryland. An applicant must offer for admission at least 15 units of credit by examination, or by a certificate from an approved high school or its equivalent. A unit represents a year's study in any subject in a secondary school and constitutes approximately a quarter of a full year's work. It presupposes a school year of 36 to 40 weeks, recitation periods of from 40 to 60 minutes, and for each study four or five class exercises a week. Two laboratory periods in any science or vocational study are considered as equivalent to one class exercise.

Of the fifteen units presented, seven are specifically designated—eight for the School of Engineering—and eight may be elected from any subject that the high school offers toward graduation.

Students are admitted without examination, if they can present certificates showing that they have completed the necessary entrance subjects. The certificates presented by the candidates must be officially certified by the principals of the schools attended and must state in detail the work completed. Blank certificates conveniently arranged for the desired data will be sent upon application.

Candidates not admitted by certificates will be required to take written examinations on the entrance subjects. These examinations are offered in June and September. Exact dates will be sent upon request.

Required and Elective Subjects
Prescribed Units

English	3	
Mathematics	2	(For Engineering 3)*
Science	1	
History	1	
Total	7	(For Engineering 8)

*Additional unit includes Algebra ½ and Solid Geometry or Plane Geometry ½.

Requirements for admission to the Medical School and Schools of Dentistry, Pharmacy and Law will be found under the chapters given to these schools.

Elective Units (eight)—To be selected from the following subjects:

Agriculture,
Astronomy,
Botany,
Chemistry,
Civics,
Commercial subjects,
Economics,
English,
General Science,
Geology,
History,
Home Economics,
Industrial subjects,
Language,
Mathematics,
Physical Geography,
Physics,
Physiology,
Zoology,

Advanced Standing

A student coming from a standard college or university may secure advanced standing by presenting a statement of his complete academic record certified by the proper officials. This statement must be accompanied by a set of secondary school credentials presented for admission to the college or university. Full credit is given for work done in other institutions when found to be equivalent in extent and quality to that required at this University. An applicant may request examination for advanced credit in any subject. In case the character of a student's work in any subject is such as to create doubt as to the quality of that which preceded, the University reserves the right to revoke at any time any credit assigned on certificate.

Registration

The University year begins September 20 and ends June 15, except for the branches located in Baltimore. (See calendar on page 5). Monday, September 20, and Tuesday, September 21, are devoted to matriculation and registration of students for the first term. Registration for the second and third terms takes place before the close of the preceding terms.

New students should go at once to the new agricultural building, where they will find a committee in charge of matriculation and registration.

Upper classmen should consult their advisers or deans and then proceed in the regular way. Students are not admitted to classes for which they are not registered in due form.

Unclassified Students

Mature persons who have had insufficient preparation to pursue any of the four-year courses may, with the consent of the Committee on Courses, matriculate for such subjects as they are fitted to take. Such

students, however, will be ineligible for a degree until they have satisfied the entrance requirements and completed an approved four-year course of study.

Graduation, Degrees, and Certificates.

All undergraduate four-year courses lead to the degree of Bachelor of Science or Bachelor of Arts. The total requirements for graduation vary, according to the type of work in the different colleges, from 204 to 220 term credit hours. A term credit hour is one lecture or recitation each week for one term of twelve weeks; two or three hours of laboratory or field work are counted equivalent to one lecture or recitation. All practical work is scheduled for two or three hours, depending upon the nature of the work. To find full information of requirements, the student should refer to the description of the school in which he is interested.

Candidates are recommended for graduation after they have completed the prescribed course of study, including all the required work and enough electives to total the required credit hours.

The University confers the following degrees: Bachelor of Arts, Bachelor of Science, Master of Arts, Master of Science, Doctor of Philosophy in Arts, Doctor of Philosophy in Science, Civil Engineer, Mechanical Engineer, Electrical Engineer, Bachelor of Laws, Doctor of Medicine, Doctor of Dental Surgery, Graduate in Pharmacy and Pharmaceutical Chemist.

Degrees are not granted to the students in the two-year curricula, but at graduation time certificates are awarded.

BUILDINGS

Some eighteen buildings have been erected on the University campus for research, extension, and residence educational purposes. The buildings comprised in the group are the Agricultural Building, Calvert Hall, the Library, Engineering Buildings, Chemical Building, Morrill Hall, Horticultural Building, the Hospital, Stock Judging Pavilion, Poultry Building, temporary dining-hall, temporary auditorium, Girls' Home Economics Practice House, and the Agricultural Experiment Station group. Other buildings are located in Baltimore.

Agricultural Building

The Executive Offices, the College of Agriculture and School of Education and the Agricultural and Home Economics Extension Service are housed in the Agricultural Building. This structure was completed and occupied in April, 1918. The building also contains biological, soils and bacteriological laboratories.

Buildings in Baltimore

The buildings of the University in Baltimore are located at the corner of Lombard and Greene streets. They consist of the original building erected in 1814, and more modern buildings adjoining, one of which is devoted to Law and one the University Hospital.

Calvert Hall

Excellent dormitory accommodations are provided in Calvert Hall, a modern fireproof structure erected and occupied in 1914. It took the place of the two dormitories destroyed by fire in 1912.

Morrill Hall

The School of Liberal Arts and the Department of Zoology are housed in Morrill Hall, which is a three-story building erected in 1898. This building formerly was occupied by the work in agriculture and engineering.

Chemical Building

The Chemical Building provides a home for the School of Chemistry and for the state work in analysis of feeds, feritlizers and agricultural lime. It has classrooms, laboratories, and offices for all undergraduate and graduate work in chemistry.

Engineering Buildings

The Mechanical Building was the first of the Engineering group constructed, having been completed and occupied by the Department of Mechanical Engineering in 1898. The Civil Engineering and Electrical Engineering additions, with accompanying shops, were built in 1910. The three buildings are connected by closed passageways.

The Infirmary

The infirmary was erected in 1901 and makes possible excellent treatment for students in cases of sickness. It has a private ward for segregation of contagious diseases, quarters for trained nurse, operating room, doctor's office, special culinary equipment, and accommodations for twenty patients.

The Horticultural Building

Classrooms, propagation rooms, and offices are contained in the Horticultural Building, completed in 1915. In connection with this, ten modern greenhouses are so constructed as to have entry into each direct from building.

The Stock Judging Pavilion

This building is used for stock judging competitions, for stock shows, and to house a part of the equipment of the dairy husbandry and farm

machinery departments of the College of Agriculture. Connecting this building with the Agricultural Building is an auditorium capable of seating 600 persons.

The Poultry Buildings

Research in poultry projects and laboratory practice is carried on in the Poultry Building. The main building contains classrooms, laboratories, offices and incubating rooms.

Experiment Station Group

The main building of the experiment station group is a large brick structure of the colonial period. It contains the office of the Director of the Station, the chemical and physiological laboratories, and a laboratory for research in soils. Other buildings of this group contain seed and milk testing laboratories, classrooms, and others are greenhouses, Agronomy Building, a secondary horticultural building, barns, farm machinery buildings, silos, etc.

Temporary Dining-Hall

A temporary wooden structure has been erected to serve as a dining-hall until the Legislature appropriates money to put up a permanent building. This wooden structure is well built and contains kitchen equipment and other facilities for comfortably taking care of about 600 persons.

Other Buildings

Another wooden structure has been used for the last few years as an auditorium. It is capable of seating about 400 persons. The College also maintains a laundry building in which it handles the students' laundry at cost. It also has two frame dwelling-houses in which it houses part of its labor. A brick power-house contains apparatus for pumping all water for College use. Another small frame house contains machinery for canning and drying of fruits and vegetables. A small brick gas-house has apparatus for manufacturing gas for use in the laboratories.

The Filtration Plant

Recently completed is a modern filtration plant for furnishing an ample supply of water for use in the dormitories and general college buildings. This plant consists of a reservoir with a reserve supply of 1,500,000 gallons, sediment tanks, filter beds, pumps, etc.

The Library

The two-story brick building housing the Library was built in 1894. On the first floor is collected material relating to the various phases of the subject of agriculture—books, bound periodicals, Experiment Station Records, all Experiment Station Bulletins of the United States,

United States Department of Agriculture and Farmers' Bulletins. The special catalog cards issued by the United States Department of Agriculture make accessible the large amount of state and national bulletin literature on agricultural subjects.

The second floor of the Library is used as a general reading and reference room as well as a stack room for all books except the agricultural.

The entire Library contains approximately 5,000 bound books and 5,000 United States Government documents and unbound reports and pamphlets. All material is on open shelves where students can easily locate it. The Library is open from 8.30 A. M. to 5.30 P. M., six days of the week; all evenings, with the exception of Saturday, from 6.30 to 10; and on Sunday afternoon, from 2.30 to 5.30. The librarian or an assistant is always in charge.

ORGANIZATIONS

The Alumni Association.

The Alumni Association is an organization composed of alumni of the University. This Association has an office at the University and has several branch associations. It publishes a monthly paper, *The State University Alumnus*, and a *Bi-Annual Record.* The Association is active in legislative and other measures for the support of the University and is represented on the Board of Trustees and on the committee which controls athletics by four members, two on each.

The Student Assembly

The Student Assembly is composed of all the students for carrying out a system of student self-government. The Student Executive Council is the executive committee of the Student Assembly and acts in coöperation with the faculty in the management of student affairs.

The Dramatic Club

The Dramatic Club is organized for the purpose of presenting at least one play each year. It is made up of men who have had experience either in this work since coming to the University or in high school.

Fraternities and Sororities.

There are at the University four national fraternities, Kappa Alpha Sigma Nu, Sigma Phi Sigma, Phi Alpha; two local fraternities, Nu Sigma Omicron, Sigma Tau Alpha; one local sorority, Sigma Delta.

Societies

Two literary societies are maintained by the students, the Poe and New Mercer. These hold weekly meetings at which regular programs are presented.

The Liebig Chemical Society is made up of students specializing in chemistry. Special lectures by students and specialists in certain branches of chemistry and open discussions of various chemical questions are featured.

The Engineering Society is composed of students in the School of Engineering.

The agricultural Club is organized according to special interests into the Horticultural Society, the Agronomy Society, and the Animal Husbandry Society.

Programs are offered in the Engineering Society and Agricultural Club similar to that of the Liebig Chemical Society, except that the subjects pertain to engineering or agriculture.

Le Cercle Francais

This club was organized in 1919 by the Department of French. Its membership is composed of the faculty of the department, students pursuing courses in French, and others interested in the study of that language. The aims of the club are to awaken a live interest in French literature, culture, history and customs, and to build up an ease in the use of the language. Although fostered by the School of Liberal Arts, this club is not restrcited to students enrolled therein, but is open to all who are interestd in things French.

Clubs

The Rifle Club is affiliated with the National Rifle Association and engages in matches with other colleges and rifle organizations.

The Chess and Checker Club is organized for the promotion of these games among those that engage in them. Annual tournaments are conducted for which gold medals are awarded.

The County Clubs are organizations of students from the same counties. The Baltimore City Club and District of Columbia Club are organizations of the same nature.

The Rossbourg Club is the student organization which has charge of most of the formal dances of the students. This club is open to all students.

The Keystone Club

This organization came into being during the past academic year when a score of men from the "Keystone State" found each other on the campus. All Pennsylvanians are eligible. Its aim is to promote a feeling of interest and good fellowship among the students from Pennsylvania.

The Christian Associations

The Young Men's and Young Women's Christian Associations are organized to be of general service to the students. They perform important functions in matters of obtaining employment for worthy stu-

dents, in receiving new students, and in helping to maintain generally a high morale and state of good fellowship in the student body. A reading-room, chess and checkers, and other games are maintained by the association for use of all the students.

Student Publications

A weekly five-column newspaper, *The Review*, is published by the students. Besides this the members of the junior class publish each year an annual book *The Reveille*. Both publications reflect the news and atmosphere of general college life.

NOTE.—For this issue of the catalogue it has been impossible to get in print the student organizations in the Law and Medical Schools.

HONORS AND AWARDS

Honorable mention is given to students for excellence in undergraduate work in the upper one-fifth of each school as follows: The upper one-tenth is given first honors, and the rest second honors, provided that the student's course average is above 80.

Debating and Oratory

An annual debate is held each year in January between the Poe and New Mercer literary societies for the "President's Cup," given by Dr. H. J. Patterson.

A gold medal is awarded by the Alumni Association each year to the best debater in the University, the test being a debate between picked teams from the two literary societies.

The University gives gold medals to members of winning teams in intercollegiate debates.

The Oratorical Association of Maryland Colleges, consisting of Washington College, Western Maryland College, St. John's College, and University of Maryland offers each year gold medals for first and second places in an oratorical contest that is held between representatives of the four institutions.

Athletics

The class of 1908 offers annually to "the man who best typifies the college athlete" a gold medal. The medal is given in honor of former President R. W. Silvester and is known as "The Silvester Medal for Excellence in Athletics."

The Military Medal

The class of 1899 offers each year a gold medal to the member of the battalion who proves himself the best drilled soldier. The medal is awarded after an individual drill by each of the contestants.

The Citizenship Prize

A gold medal is presented annually by H. C. Byrd, a graduate of the class of 1908, to the member of the senior class who during his collegiate career has nearest typified the model citizen and who has done most for the general advancement of the interests of the University.

FEES AND EXPENSES

NOTE.—Following information about fees, scholarships, etc., has no relationship to the Medical and Law group. This information in their connection will be found under their group headings.

Make all checks payable to University of Maryland.

The charges for each term must be paid at the beginning of the term. Students will not be admitted to classes until payment has been made or until satisfactory arrangements have been made for deferring payment. An additional charge of 10% will be added to accounts remaining unpaid at the close of the first month after registration.

No charge is made for tuition in any of the colleges or schools except Law, Medicine, Dentistry, and Pharmacy.

The estimated average annual expenses of undergraduates are as follows:

	First Term.	*Second Term.*	*Third Term.*	*Total.*
Fixed Charges	20.00	20.00	20.00	60.00
Board (36 weeks)	80.60	67.70	67.70	216.00
Lodging (39 weeks) ...	24.05	24.05	24.05	72.15
Laundry (36 weeks) ...	7.20	7.20	7.20	21.60
Damage Fee.....	5.00			5.00
*Athletic Fee.....	10.00			10.00
Totals.....	$146.85	$118.95	$118.95	$384.75

The above does not take into consideration the cost of books, supplies and personal needs. This depends largely on the tastes and habits of the individual student. Books and supplies average about $40.

The fixed charges made to all students are a part payment of overhead expenses, such as janitor services, hospital and doctor's fees, general laboratory fees, library, physical training, etc.

Board, lodging and other charges may vary from term to term, but every effort will be made to keep expenses as low as possible.

The damage fee is to cover breakage, loss of library books, and injury to property which cannot be charged directly against any student.

*This is a special fee collected by the University for the support of Athletics and is turned over, in toto, to the Athletic Board, which expends it.

Damage to university property will be charged pro rata to the whole student body unless the offender is known. Any unused part of this fee is returned to the student upon withdrawal or at the close of the year.

In case of illness requiring a special nurse or special medical attention the expense must be borne by the student.

Board and lodging may be obtained at boarding-houses or in private families if desired.

Students rooming outside the University may obtain board and laundry at the same rates as those living in the dormitories.

Day students may get lunch at nearby lunch rooms.

All the University property in possession of the individual student will be charged against him, and the parent or guardian must assume responsibility for its return without injury other than results from ordinary wear.

All Students assigned to dormitories are required to provide themselves with one pair of blankets for single bed, two pairs of sheets for single bed, four pillow cases, six towels, one pillow, two laundry bags, one broom and one waste basket.

Special Fees.

Bacteriology Laboratory Fee	$2.00
Fee for special condition examination	1.00
Fee for changes in registration after first week of term	1.00
Fee for failure to register within seven days after opening of term (.25 for each succeeding day of delay)	2.00
Diploma fee payable prior to graduation	5.00
Certificate fee payable prior to graduation	3.00

No diploma will be conferred upon, nor any certificate granted to a student who is in arrears in his accounts.

Graduate Fees.

Each graduate student is subject to a matriculation fee of $10.00, a fixed charge of $1.00 per term credit hour and a diploma fee of $10.00.

Withdrawals.

When a student desires to withdraw from the University he is required to secure from his Dean a written approval, which must be presented to the Registrar. *Charges for full time will be continued against him unless this is done.*

Students withdrawing before the end of any term will be charged $7.00 per week for board and $2.00 per week for lodging for the time during the term preceding their withdrawal.

Refunds

No fixed charge will be refunded.

No laboratory fee will be refunded after the middle of the term.

The low charge for board at the dining hall is made possible only by the use of the term basis in figuring costs. The overhead is fixed for the term and no refunds can be made for short absences without a loss to the dining hall and to the students who eat there. Therefore, no refunds can be made except in case of withdrawal or prolonged absence due to sickness or unavoidable cause.

SCHOLARSHIPS AND SELF AID

High School Scholarships.

While the University has no endowment nor loan funds with which to assist students, it has established for each high and preparatory school in Maryland and the District of Columbia one scholarship each year. For the three counties of Maryland which do not have high schools, Calvert, Charles and St. Mary's, one scholarship each year is given. These scholarships have a value of fifty dollars and are credited to the holder's account.

These scholarships are offered under the following conditions:

1. The holder must be a graduate of a high school and qualified to enter the freshman class.
2. The appointment to the scholarships must be made by the county school superintendent upon recommendation of the principal of the high school. In making recommendations high school principals should not only take into consideration class standing but also inability to meet the expenses of a university education.
3. The appointment shall be made for the term normally required to complete the curriculum selected.
4. The scholarship will be forfeited by indifference to scholastic work or by disregard of rules of the University.
5. Scholarships awarded to preparatory schools and to high schools of Baltimore and Washington shall be given on recommendation of the principals direct to the University. Recipients of preparatory school scholarships must be qualified to enter the freshman class.
6. Applicants from Charles, St. Mary's, and Calvert counties may take one of the non-collegiate curriculums or, if entering from another institution, may take one of four-year curriculums leading to a degree.

Fellowships

The University also offers a number of fellowships. These may be given either to its own graduates or the graduates of other colleges who desire to pursue courses in the Graduate School leading to advance de-

grees. Fellowships are available in the College of Agriculture, School of Engineering, School of Chemistry, and School of Liberal Arts. These fellowships are worth from $500 to $720 per year.

Industrial Scholarships

There are available each year, as they become vacant, a number of industrial scholarships, in which students receive compensation for attending to certain prescribed duties, such as waiting on the tables in the dining hall, janitor service in the dormitory, and postmaster. Students may frequently earn enough in this way to cover board and lodging.

Student Labor

Students may earn a considerable portion of their expenses by doing work for the several departments on an hour basis. Services of those who have a good knowledge of stenography, typewriting, electrical, or mechanical work are in demand. Considerable work is available around the buildings and grounds and on the Agricultural Experiment Station farm.

THE COLLEGE OF AGRICULTURE

The teaching of a rational, practical system of farming is the primary aim of the College of Agriculture. The permanent prosperity of rural citizens is in direct proportion to the producing capacity of the land. The most successful farmer is the one who can produce a maximum quantity per acre of the best quality of agricultural products at a minimum cost and dispose of them in the markets to the best advantage. The modern farmer must know the kinds of plants to grow and how to improve them; how to maintain orchards, gardens, and attractive surroundings; something of the soil, its cultivation and conservation of fertility; how to combat plant diseases and insect pests; the selection, breeding, and feeding of live stock; the marketing of farm products; modern farm buildings, farm equipment and conveniences of the home; and finally how to be leaders and promote good citizenship in rural life.

The curricula are planned to give the student a general knowledge of all phases of agriculture and related sciences, but at the same time afford an opportunity to specialize along the lines in which he is particularly interested. The plan provides for those who wish to take up professions such as teaching, research, county agent work, as well as farming.

Organization

For administrative purposes and for ease of instruction the School of Agriculture is organized as follows:

A. Division of Plant Industry, including the following departments:
 1. Horticulture.
 a. Pomology.
 b. Vegetable Gardening.
 c. Landscape Gardening.
 d. Floriculture.
 2. Agronomy.
 a. Forage Crops.
 b. Grain Crops.
 3. Plant Morphology and Mycology.
 4. Plant Physiology.
 5. Plant Pathology.
 6. Foresty.

B. Division of Animal Industry, including the following departments:
 1. Department of Dairy Husbandry, comprising Dairy Stock, Production, Dairy Manufacture and Marketing.
 2. Department of Animal Husbandry, comprising Cattle, Horses, Swine, Sheep, Goats.

3. Department of Poultry Husbandry.
4. Department of Animal Pathology and Veterinary Medicine.
5. Department of Bacteriology and Sanitation.
6. Laboratory of Biological Products.

C. The Department of Geology and Soils.
D. The Department of Farm Management, including also Agricultural Economics, Markets, and Rural Organization.
E. The Department of Zoology, including General Zoology, Entomology, Bee Culture, and Fish Culture.
F. The Department of Farm Equipment.
G. The Department of Short Courses in Agriculture.

Equipment

The College has about 320 acres of land for use in experimental work orchards, truck gardens, and for pasture land. A portion of the land is given over solely for instructional purposes.

The College of Agriculture is housed in the newest building on the campus, Agricultural Hall. This building is the home of the Departments of Agronomy, Soils, Animal Husbandry, Dairy Husbandry, Farm Management, Bacteriology, Botany, and in part Horticulture. Many of the departments now have very well equipped laboratories and others are under way.

The Horticultural Department has at its disposal a range of ten greenhouses that are fifty by twenty feet and which join with spacious laboratories in a long brick structure. Together with the greenhouses necessary cold-frames and hotbeds are provided.

The Department of Zoology has quarters on the first and second floors of Science Hall with laboratories well supplied with collections of insects, models, microscopes, and other supplies necessary for practical work in zoology and entomology. A greenhouse with an aquarium and screen insectary adjacent to the laboratories are available for class and investigational work.

The proximity of the College to Washington, D. C., with its United States Department of Agriculture, offers unusual opportunities for agricultural students.

With its new building, laboratories, greenhouses, and farm, the College of Agriculture is prepared to give a thorough training in the science and art of farming.

Agricultural Experiment Station

The College of Agriculture works in cooperation with the Agricultural Experiment Station. Most of the subject matter in agricultural courses is tested by the station or furnished as original from its researches. Methods and material which are valuable in one state are often worth

less in another, and the station makes it a point to find what is best for the State of Maryland.

The members of the staff employed for research are available to spend some time teaching advanced students. Some are employed to divide their time between college instruction, experiment station research, and extension teaching.

Fellowships

The experiment station employs several graduate students to conduct experiments along certain lines with the privilege at the same time of working toward advanced degrees by taking graduate instruction in the College. There are also several fellowships in the College of Agriculture where graduate students are employed to spend part time assisting in class and laboratory work. The time required for a degree depends on the nature of the fellowship held. The arrangement makes it possible for a student to get valuable experience while he still is in College. Those who are interested and qualified should write to the Dean of the College for information.

Farm Experience

It is impossible for students who have not had farm experience to secure the fullest benefit from any of the agricultural courses. A committee of the faculty is appointed to see that all students have a fair knowledge of actual farm practices before graduation. Students are often required to spend from three to nine months on a farm approved by the committee in charge. Weekly reports of the farm operations are sent to the College and a final examination is given upon the student's return. The University degree is withheld until the student satisfies the requirement.

Instruction, Degrees, and Certificates

The various needs of students of agriculture are met by the following curricula:

1. Graduate curricula extending over one year for the degree of master of science and three years for the degree of doctor of philosophy, given under the supervision of the Graduate School. Further information will be found under that heading.
2. Four-year curricula leading to the degree of bachelor of science in general agriculture and biological sciences or any special phase of these sciences.
3. Two-year non-collegiate agriculture leading to a certificate of credit.
4. One-week course—"Farmers' Week."

Curricula in Agriculture

All students registered in the College of Agriculture take the same work in the freshman year. At the end of the year they may elect to specialize in a particular department or they may withhold the decision to the end of the sophomore year without loss of time.

GENERAL FRESHMAN CURRICULUM.

FRESHMAN YEAR. Term:	I	II	III
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
General Zoology (Zoo. 101-102)	3	3	
General Botany (Bot. 101)			4
Survey of Agriculture (Gen'l Agr. 101-102)	1	1	
Composition and Rhetoric (Eng. 101-103)	3	3	3
Public Speaking (Pub. Sp. 101-103)	1	1	1
ELECT ONE OF THE FOLLOWING GROUPS:			
Group A—			
Cereal Crops (Agron. 101)	4		
Animal Husbandry (A. H. 101)		4	
Elementary Vegetable Gardening (Hort. 111)			4
Group B—			
Social and Economics History of U. S. (H. 118-120)	3	3	3
Group C—			
Language	3	3	3
Group D—			
Mathematics	3	3	3
Basic R. O. T. C. (M. I. 101)	2	2	2

Those who do not care to specialize in any particular phase of agriculture will follow the curriculum called General Agriculture.

GENERAL AGRICULTURE.

SOPHMORE YEAR.

Feeds and Feeding (A. H. 102)	4		
Principles of Dairying (D. H. 101)	3		
Dairy Production and Barn Practice (D. H. 102)		3	
Management of Dairy Young Stock (A. H. 103)			3
Pomology (Hort. 102)	4		
Geology (Soils 101)	3		
Introductory Study of Soils (Soils 102-103)		3	3
Plant Physiology (Plt. Phy. 101-102)		4	3
Grain Judging (Agro. 102)		1	
Forage Crops (Agro. 103)			4
Basic R. O. T. C. (M. I. 102)	2	2	2
Elective	2	5	3

JUNIOR YEAR.

Farm Dairying (D. H. 107)	3		
Farm Machinery	3		
Tractors and Trucks			3
Elements of Economics (Econ. 101-102)	3	3	
Plant Pathology (Plt. Path. 101)	3		
Entomology (Zoo. 103)			3
Technical Composition (Eng. 104-106)	2	2	2
Elective	3	12	9

SENIOR YEAR.

Farm Management (Agri. Econ. 10)	3	3	
Farm Buildings	2		
Animal Diseases (V. M. 102)		4	
Elective	12	10	17

GENERAL AGRICULTURE.

Gen'l Agr. 101-103. *Survey of Agriculture.* One credit hour each term: one lecture. First and second terms. Freshman year.

A course designed to assist the new students in adjusting themselves to the demands and problems of college life, and to aid them in the selection of courses in the subsequent years. Students will have an opportunity to hear the different phases of agriculture discussed by the heads of the various departments of the College of Agriculture.

DIVISION OF PLANT INDUSTRY

HORTICULTURE

There are several reasons why the State of Maryland should be pre-eminent in the different lines of horticulture and offer such excellent opportunities for horticultural enterprises. A few of the more evident ones are the wide variation in soil and climate from the Eastern Shore to the mountainous counties of Allegany and Garrett in the west, the nearness to all of the large eastern markets, the large number of railroads, interurban lines and waterways, all of which combine to make marketing easy and comparatively cheap.

The Department of Horticulture offers four major lines of work, namely: Pomology, Vegetable Gardening, Floriculture and Landscape Gardening. Students wishing to specialize in Horticulture can arrange to take either a general course during the four years or enough work is offered in each division to allow students to specialize during the last two years in any of the four divisions. The courses have been so planned and cover such subject matter that upon their completion students should be fitted either to engage in commercial work, county agent work, or teaching and investigational work in state and federal institutions.

CURRICULA IN HORTICULTURE

Students who intend to specialize in any of the four divisions of Horticulture are required to take the same subjects during the first two years.

SOPHOMORE YEAR. Term:	I	II	III
General Geology (Geol. 101)	3		
Soils 101-102		3	3
Plant Anatomy (Morph. and Myc. 101)	3		
Plant Physiology (Plt. Phy. 101-102)		4	3
Elementary Pomology (Hort. 101)	4		
Elementary Floriculture (Hort. 121)		3	
Vegetable Forcing (Hort. 118)		3	
Elementary Landscape Gardening (Hort. 131)			3
Forage Crops (Agron. 103)			4
Entomology (Zoo. 106)			3
Feeds and Feeding (A. H. 102)	4		
Organic Chemistry (Gen'l Chem. 112-113)	3	3	
Basic R. O. T. C. (M. I. 102)	2	2	2
Elective	0	0	0

POMOLOGY.

JUNIOR YEAR. Term:	I	II	III
Principles of Economics (Econ. 101-102)	3	3	
Technical Composition (Eng. 104-106)	2	2	2
Commercial Fruit Growing (Hort. 102-103)	3	3	
Systematic Pomology (Hort. 104)	3		
Small Fruit Culture (Hort. 106)			3
Fruit and Vegetable Judging (Hort. 108)	2		
General Plant Pathology (Plt. Path. 101)	3		
Horticultural Entomology (Zoo. 113)			3
Genetics (Agron. 107)		4	
Elective	1	5	9

SENIOR YEAR.

Farm Management (F. M. 101-102)	3	3	
Economic Fruits of the World (Hort. 107)		3	
Advanced Fruit Judging (Hort. 109)	1		
Advanced Practical Pomology (Hort. 105)	1		
Horticultural Breeding Practice (Hort. 142)			1
Horticultural Research and Thesis (Hort. 143-145)	2	2	2
Horticultural Seminar (Hort. 146-148)	1	1	1
Elective	9	8	13

VEGETABLE GARDENING.

JUNIOR YEAR.

Principles of Economics (Econ. 101-102)	3	3	
Technical Composition (Eng. 104-106)	2	2	2
Commercial Vegetable Gardening (Hort. 113-115)	3	3	3
Tuber and Root Crops (Hort. 112)	3		
Small Fruit Culture (Hort. 106)			3
General Plant Pathology (Plt. Path. 101)	3		
Horticultural Entomology (Zoo. 113)			3
Genetics (Agron. 107)	3		
Elective		9	6

SENIOR YEAR.

Farm Management (F. M. 101-102)	3	3	
Systematic Olericulture (Hort. 116)	3		
Advanced Vegetable Gardening (Hort. 117)			1
Horticultural Breeding Practice (Hort. 142)			1
Greenhouse Construction (Hort. 125)		2	
Horticultural Research and Thesis (Hort. 143-145)	2	2	2
Horticultural Seminar (Hort. 146-148)	1	1	1
Elective	8	9	12

FLORICULTURE.

JUNIOR YEAR. Term:	I	II	III
Greenhouse Management (Hort. 122-123)	3	3	
Floriculture Practice (Hort. 124)			1
Greenhouse Construction (Hort. 125)		2	
Garden Flowers (Hort. 128)			3
Plant Materials (Hort. 132)	2		
Plant Materials (Hort. 133)			2
Principles of Economics (Econ. 101-102)	3	3	
Technical Composition (Eng. 104-106)	2	2	2
Gen. Plant Pathology (Plt. Path. 101)	3		
Hort. Entomology (Zoo. 113)			3
Genetics (Agron. 107)		4	
Elective	4	3	6

SENIOR YEAR.

Commercial Floriculture (Hort. 126-127)	3	3	
Horticultural Breeding Practice (Hort. 142)	2	2	1
Horticultural Research and Thesis (Hort. 143-145)	3		2
Horticultural Seminar (Hort. 146-148)	1	1	1
Elective	11	11	13

LANDSCAPE GARDENING.

JUNIOR YEAR.

Plant Materials (Hort. 132-133)	2		
History of Landscape Design (Hort. 138)		1	
Elements of Landscape Gardening (Hort. 134)		2	
Garden Flowers (Hort. 127)			3
Principles of Economics (Econ. 101-102)	3	3	
Technical Composition (Eng. 104-106)	2	2	2
Systematic Botany (Morph. and Myc. 102)			3
Horticultural Entomology (Zoo. 121)			3
General Plant Pathology (Plt. Path. 101)	3		
Engineering Drawing (Dr. 104)	1		
Surveying			2
Elective	6	9	4

SENIOR YEAR.

Landscape Design (Hort. 135-136)	3	3	
Landscape Practice (Hort. 137)			3
Civic Art (Hort. 139)	2		
Horticultural Research and Thesis (Hort. 143-145)	2	2	2
Horticultural Seminar (Hort. 146-148)	1	1	1
Elective	9	11	11

DESCRIPTION OF COURSES

POMOLOGY

Hort. 101. Elementary Pomology. Four credit hours; three lectures and one laboratory period. First term, sophomore year.

In this course a study is made of the general practices in Pomology. The proper location and site for an orchard are discussed. Also varieties, planting plans, inter-crops, spraying, cultural methods, fertilizing methods, thinning, picking, packing and marketing are given consideration. In this course these subjects are discussed for apples, peaches, pears, plums, cherries and quinces. The principles of plant propagation as applied to pomology are discussed.

Hort. 102-103. Commercial Fruit Growing. Three credit hours: two lectures and one laboratory period. First term. Three credit hours: two lectures and one laboratory period. Second term. Junior year. prerequisite, Hort. 101.

In this course a study is made of the proper management of commercial orchards in Maryland. Advanced work is taken up on the subjects of orchard culture, orchard fertilization, picking, packing, marketing and storing of fruits, orchard by-products, orchard heating and orchard economics.

Hort. 104. Systematic Pomology. Three credit hours: two lectures and one laboratory period. First term, junior year. Prerequisite, Hort. 101.

The history, botany and classification of fruits and their adaptation to Maryland conditions are discussed in this course. Exercises are given in describing and identifying the leading commercial varieties of fruits. Students in this course are required to help set up the College fruit show each year.

Hort. 105. Advanced Practical Pomology. One credit hour. First term, senior year. Prerequisites, Hort. 102-103 and 104.

A trip occupying one week's time will be made through the principal fruit regions of Eastern West Virginia, Maryland and Pennsylvania. A visit to the fruit markets of several large cities will be made. The cost of this trip should not exceed thirty dollars to each student. Each student will be required to hand in a detailed report covering the trip. The time for taking this trip will be arranged yearly with each class.

Hort. 106. Small Fruit Culture. Three credit hours: two lectures and one laboratory period. Third term, junior year.

The care and management of small fruit plantations are discussed in this course. Varieties and their adaptation to Maryland soils and climate, packing, marketing, and a study of the experimental plots and

varieties on the station grounds are made. The following fruits are discussed in the course: the grape, strawberry, blackberry, black cap raspberry, red raspberry, currant, gooseberry, dewberry and loganberry.

Hort. 107. Economic Fruits of the World. Three credit hours: three lectures. Second term, senior year. Prerequisites, Hort. 102-103 and 104.

A study is made of the botanical, ecological and physiological characteristics of all species of fruit-bearing plants of economic importance, such as the date, pineapple, fig, olive, banana, nut bearing trees, citrus fruits, newly introduced fruits and the like, with special reference to their cultural requirements in certain parts of the United States and the insular possessions. All fruits are discussed in this course which have not been discussed in a previous course.

Hort. 108. Fruit and Vegetable Judging. Two credit hours: two laboratory periods. First term, junior year. Prerequisites, Hort. 101, and 111.

This is a course designed to train men for fruit judging teams and practical judging. Students are required to know at least one hundred varieties of fruit, and are given practice in judging single plates, largest and best collections, boxes, barrels and commercial exhibits of fruits and vegetables. Students in this course are required to help set up the College fruit show each year.

Hort. 109. Advanced Fruit Judging. One credit hour: one laboratory period. First term, senior year. Prerequisite, Hort. 108.

VEGETABLE GARDENING

Hort. 111. Elementary Vegetable Gardening. Four credit hours: three lectures and one laboratory period. Third term, freshman year.

This course includes a study of the different types of vegetable gardening, methods of propagation, construction and management of hotbeds and cold-frames. Growing early vegetable plants under glass and the planting, cultivating and harvesting under irrigation and in a large farmer's garden are discussed.

Hort. 112. Tuber 2nd Root Crops. Three credit hours: two lectures and one laboratory period. First term, junior year. Prerequisite, Hort. 111.

In this course a study of white potatoes and sweet potatoes is made, which includes considerations of seed, varieties, propagation, soils, fertilizers, planting, cultivation, spraying, harvesting, storing and marketing.

Hort. 113-115. Commercial Vegetable Gardening. Three credit hours each term. Junior year. Two lectures and one laboratory periods. Prerequisite, Hort. 111.

The methods employed by truckers and market gardeners in commercial production, equipment, use of hotbeds and cold-frames, field planting, rotation of crops and irrigation. Cultural directions for all vegetables are given, including their varieties, requirements, tillage, control of insects and diseases, grading, storing, packing and marketing. Each student plans and manages intensive cropping systems on small areas and under irrigation, and extensive planting on larger areas in a six-year rotation.

Hort. 116. Systematic Olericulture. Three credit hours: one lecture and two laboratory periods. First term, senior year. Prerequisites, Hort. 112 and 113-115.

This course includes a systematic and descriptive study of the leading varieties of the most important vegetables, their origin and botany, adaptation of the various varieties to the different cultural and market conditions, judging and exhibition work.

Hort. 117. Advanced Vegetable Gardening. One credit hour. Third term, senior year. Prerequisites, Hort. 112, 113-115 and 116.

A trip of one week is made to the commercial trucking sections of Maryland, Delaware, New Jersey and Pennsylvania. A study of the markets in several large cities is included in this trip. Students are required to hand in a detailed report of the trip. Such a trip should not exceed thirty dollars per student. The time will be arranged each year with each class.

Hort. 118. Vegetable Forcing. Three credit hours: two lectures and one laboratory period. Second term, sophomore year. Prerequisite, Hort. 111.

The forcing of vegetables under glass is covered in this course. All vegetables used for forcing are considered, as also the preparation of soils, cultivation, regulation of temperature and humidity, watering, training, pruning, pollination, and harvesting.

FLORICULTURE.

Hort. 121. Elementary Floriculture. Three credit hours: two lectures and one laboratory period. Second term, sophomore year.

An elementary course in the culture of greenhouse and home plants, and of the common annuals and perennials used in outdoor work.

Hort. 122-123. Greenhouse Management. Three credit hours: two lectures and one laboratory period. First term. Two credit hours: one lecture and one laboratory period. Second term. Junior year.

A consideration of the methods employed in the management of greenhouses, including the operations of potting, watering, ventilating, fumigation, and methods of propagation.

Hort. 124. Floriculture Practice. One credit hour: one laboratory period. Third term. Junior year. Prerequisite, Hort. 122-123.

Designed to give students practical experience in the varoius greenhouse operations of the spring season.

Hort. 125. Greenhouse Construction. Two credit hours: one lecture and one laboratory period. Second term Junior year.

A study of the various types of houses, their location, arrangement, construction, and cost; the principles and methods of heating; also the preparation of plans and specifications for commercial and private ranges.

Hort. 126-127. Commercial Floriculture. Three credit hours each term: two lectures and one laboratory period. First and second terms. Senior year. Prerequisite, Hort. 124.

The method of culture of florists' bench crops and potted plants; the marketing of cut flowers; the retail store; a study of floral decoration.

Hort. 128. Garden Flowers. Three credit hours: two lectures and one laboratory period. Third term. Junior year.

This course aims to acquaint the student with the variety of material available for garden use, being a study of the species of annuals, herbaceous perennials, bulbs, bedding plants, and roses; including their cultural requirements.

Hort. 129. Amateur Floriculture. Three credit hours: two lectures and one laboratory. Third term.

A general study of floriculture in relation to the home; the care of house plants; home gardening.

LANDSCAPE GARDENING.

Hort. 131. General Landscape Gardening. Three credit hours: two lectures and one laboratory period. Third term. Sophomore year.

The theory and general principles of landscape gardening and their application to private and public area. Special consideration is given to the improvement and beautification of the home grounds, farmsteads, and small suburban properties. Adapted to students not intending to specialize in landscape, but who wish some theoretical and practical knowledge of the subject. Open to all students.

Hort. 132. Plant Materials. Two credit hours: one lecture and one laboratory period. First term. Junior year.

A field and laboratory study of trees, shrubs, and vines used in ornamental planting.

Hort. 133. Plant Materials. Two credit hours: one lecture and one laboratory period. Third term. Prerequisite, Hort. 132.

A continuation of Hort. 132 to make the student familiar with the woody plants in spring and summer.

Hort. 134. Elements of Landscape Design. Two credit hours: one lecture and one laboratory period. Second term. Junior year.

A consideration of the principles of landscape design; surveys, mapping, and field work.

Hort. 135-136. Landscape Design. Three credit hours: one lecture and two laboratory periods. First term. Three credit hours: three laboratory periods. Second term. Senior year. Prerequisites, Hort. 133 and 134.

The design of private grounds, gardens, and of architectural details used in landscape; planting plans; analytical study of plans of practicing landscape architects; field observation of landscape developments.

Hort. 137. Landscape Practice. Three credit hours: one lecture and two laboratory periods. Third term. Senior year. Prerequisites, Hort. 135-136.

Tracing and drafting of plans; construction methods; field practice.

Hort. 138. History of Landscape Gardening. One credit hour: one lecture. Second term. Junior year.

A study of the different styles and a particular consideration of Italian, English, and American gardens.

Hort. 139. Civic Art. Two credit hours: one lecture and one laboratory period. First term. Senior year. Prerequisites, Hort. 134.

General study of principles of city planning and their application to village and rural improvement, including problems in design of civic centers, parks, school grounds, and other public and semi-public areas.

GENERAL COURSES

Hort. 142. Horticultural Breeding Practice. One credit hour: one laboratory period. Third term, senior year. Prerequisite, Genetics, Plant Phys. 104.

Practice in plant breeding, including pollination, hybridization, selection, note taking, and the general application of the theories of heredity and selection to practice are taken up in this course.

Hort. 143-145. Horticultural Research and Thesis. Two, three or four credit hours each term. Hours to be arranged.

This course is required of seniors. Advanced students in any of the four divisions of horticulture may select some special problem for individual investigation. This may be either the summarizing of all the available knowledge on a particular problem or the investigation of some new problem. Where original investigation is carried on, students should in most cases start the work during the junior year. The results of the research work are to be presented in the form of a thesis and filed in the horticultural library.

Hort. 146-148. Horticultural Seminar. One credit hour each term. Hours to be arranged.

This course is required of seniors; juniors are permitted to attend. In this course papers are read by members of the class upon subjects pertaining to their research or thesis work, or upon special problems assigned them. Discussions of special topics are given from time to time by members of the departmental staff.

COURSES INTENDED PRIMARILY FOR GRADUATES.

Hort. 201. Experimental Pomology. Three credit hours. Second term. Lectures, three hours.

A systematic study of the sources of knowledge and opinion as to practices in Pomology; methods and difficulties in experimental work in Pomology and results of experiments that have been or are being conducted in all experiment stations in this and other countries. A limited number of seniors will be allowed to take this course with the approval of the head of the department.

Hort. 202. Experimental Vegetable Gardening. Two credit hours. Lectures, two hours. Second term.

A systematic study of the sources of knowledge and opinion as to practices in Vegetable Gardening; methods and difficulties in experimental work in Vegetable Gardening and results of experiments that have been or are being conducted in all experiment stations in this and other countries. A limited number of seniors will be permitted to take this course with the approval of the head of the department.

Hort. 203. Experimental Floriculture. Two credit hours. Lectures, two hours. Second term.

A systematic study of the sources of knowledge and opinions as to practices in Floriculture are discussed in this course. The results of all experimental work in Floriculture which have been or are being conducted will be thoroughly discussed. A limited number of seniors will be permitted to take this course with the approval of the head of the department.

Hort. 204. Methods of Research. Two credit hours. Lecture, one hour, one laboratory period. Second term.

In this course special drill will be given in the making of briefs and outlines of research problems, in methods of procedure in conducting investigational work and in the preparation of bulletins and reports. A study of the origin, development and growth of horticultural research is taken up. A study of the research problems being conducted by the department of horticulture will be made, and students will be required to take notes on some of the experimental work in the field and become familiar with the manner of filing and cataloging all experimental work.

Hort. 205-207. Advanced Horticultural Research and Thesis. Two, three or four credit hours each term. Hours to be arranged. First, second and third terms.

Students will be required to select problems for original research in either Pomology, Vegetable Gardening, Floriculture or Landscape Gardening. This work is to continue throughout the full year, and final results will be published in the form of a thesis.

Hort. 208-219. Advanced Horticultural Seminar.

This course will be required of all graduate students. Students will be required to give reports either on special topics assigned them or on the progress of their own investigational work being done in course 205. Members of the departmental staff will report special research work from time to time.

REQUIREMENTS OF GRADUATE STUDENTS IN HORTICULTURE

Pomology—Graduate students specializing in Pomology who are planning to take an advanced degree will be required either to take or offer the equivalent of the following courses: Hort. 102-103, 104, 107, 201, 204, 205-207 and 208-210; Advanced Plant Physiology 103-5; and Organic Chemistry.

Vegetable Gardening—Graduate students specializing in Vegetable Gardening who are planning to take an advanced degree will be required either to take or offer the equivalent of the following courses: Hort. 113-115, 116, 202, 204, 205-207, 208-210; Advanced Plant Physiology 103-5; Organic Chemistry.

Floriculture—Graduate students specializing in Floriculture who are planning to take an advanced degree will be required either to take or offer the equivalent of the following courses: Hort. 122-123, 127, 132, 203, 204, 205-207, 208-210; Advanced Plant Physiology 103-5; Organic Chemistry.

Landscape Gardening—Graduate students specializing in Landscape Gardening, who are planning to take an advanced degree, will be required either to take or offer the equivalent of the following courses: Hort. 132, 133, 134, 135, 137, 204, 205-207, 208-210; Advanced Plant Physiology 103-5.

Additional Requirements—In addition to the above required courses, all graduate students in Horticulture are advised to take Physical Chemistry.

Unless graduate students in Horticulture have had some course work in Entomology, Plant Pathology and Genetics, certain of these courses will be required.

For Short-Course Students

Hort. 1. Practical Pomology. Two lectures and one laboratory period. First term. First year.

This is a general course covering the propagation of our common fruits. Such subjects as orchard site, location, varieties, planting plans, cultural methods, fertilizer requirements, and picking, packing and marketing are discussed. All of the tree fruits are taken up in this course.

Hort. 2-3. Commercial Fruit Growing. Three lectures and one laboratory period. First and second terms. Second year. Prerequisite, Hort. 1.

This is an advanced course dealing with the proper management of commercial orchards in Maryland. Special attention is given to the subjects of pruning, picking, packing, marketing and storing of the various fruits. Market problems, transportation and shipping associations receive special attention. Students are required to become familiar with all of the leading commercial varieties of all fruits grown in Maryland. Practice is given in fruit judging and the arrangement of fruits for exhibition purposes. Horticultural by-products are given attention in this course.

Hort. 4. Small Fruits. Two lectures and one laboratory period. Third term. Second year.

In this course the production of strawberries, bush fruits and grapes is considered. Methods of propagation, selection of sites, soils, pruning, cultivation, picking, packing and marketing are discussed.

Hort. 5. Home Vegetable Gardening. Two lectures and one laboratory period. Third term. First year.

The general principles of vegetable gardening as applied to the growing of vegetables for home use. The laboratory work includes a study of vegetable seeds, seed testing, seed sowing, transplanting and the care of plants in the greenhouses and cold-frames. The students are required to plan, plant and manage a large home garden until the end of the term.

Hort. 6-8. Commercial Vegetable Gardening. Two lectures and one laboratory period. First, second and third terms. Second year. Prerequisite, Hort. 5.

This course is planned to run the entire school year. A study of the principles of vegetable gardening, as applied to the growing of vegetables for market and for canning. The course includes the construction and management of hotbeds and cold-frames, sowing and planting, cultivation, growing early vegetable plants, soil preparation, harvesting, grading, packing, marketing, canning and storage. Each student is allotted a definite area and is required to plan, plant and manage it.

Hort. 9. Landscape and Floriculture. Two lectures and one laboratory. Second term. First year.

The principles of landscape gardening and their application to the improvement of home grounds. The propagation and culture of garden and greenhouse plants.

Hort. 10-12. Commercial Floriculture. Two lectures and one laboratory period. First, second and third terms. Second year. Prerequisite, Hort. 9.

This course is planned to run the full school year. Studies in the propagation and culture of commercial florist crops are taken up in this course. Methods of packing, shipping and marketing will be considered. The course is so organized as to fit students for commercial work.

Hort. 13-14. Landscape Design and Practice. Two lectures and three laboratory periods. First and second terms. Second year. Prerequisite, Hort. 13.

The composition of gardens, private estates and related problems. Grading plans, construction, drawing, estimates and laying out of grounds are considered. Plant materials are thoroughly studied in this course also.

AGRONOMY

The curriculum in agronomy aims to give the student the fundamental principles of crop production. Special attempt is made to adapt the work to the young man who wishes to apply scientific principles of field crop culture and improvement on the farm. At the same time enough freedom is given the student in the way of electives so that he can register for subjects which might go along with the growing of crops on his particular farm. A student graduating from the course in agronomy should be well fitted for general farming, investigational work in the State or Federal Experiment Stations, or for county agent work.

The Agronomy Department has a large, well equipped laboratory in the new agricultural building and a greenhouse for student use, besides free access to the experiment station fields and equipment.

AGRONOMY.

SOPHOMORE YEAR. Term:	I	II	III
Forage Crops (Agron. 103)			4
Grain Judging (Agron. 102)		1	
Soil Physics and Management (Soils 101-102)		3	3
General Geology (Geol. 101)	3		
Plant Anatomy (Morph. and Myc. 101)	3		
Plant Physiology (Plt. Phys. 101-102)		4	3
Entomology (Zoo. 106)			3
Organic Chemistry (Gen'l Chem. 112-113)	3	3	
Agricultural Chemistry (Ind. Chem. 101)			4
Tuber and Root Crops (Hort. 112)	3		
Elementary Pomology (Hort. 101)	4		
General and Applied Psychology (Prin. Ed. 105)		2	
Basic R. O. T. C. (M. I. 102)	2	2	2
Electives	0	3	0
JUNIOR YEAR.			
Grading Farm Crops (Agron. 107)		2	
Grading Farm Crops (Agron. 106)		4	
Soil Bacteriology (Soils 107)			4
General Bacteriology (Bact. 101-102)	3	3	
General Plant Pathology (Plt. Path. 101)	3		
Soil Fertility and Fertilizers (Soils 105)			3
Technical Composition (Eng. 104-106)	2	2	2
Principles of Economics (Econ. 101-102)	3	3	
Tractors (Farm Equip. 103)			3
Farm Machinery (Farm Equip. 101)	3		
Electives	8	3	5
SENIOR YEAR.			
Crop Breeding (Agron. 104)			3
Methods in Crop Investigations (Agron. 105)	3		
Crop Rotation (Agron. 108)		2	
Seminar (Agron. 109)		1	
Soil Survey and Classification (Soils 106)	3		
Farm Management (F. M. 101-102)	3	3	
Studies in Agricultural Economics (A. E. 103)			3
Farm Forestry ()			3
Electives	8	11	8

Description of Courses

Agron. 101. Cereal Crops. Four credit hours: three lectures and one three-hour laboratory period. First term. Freshman year.

A study of the history, distribution, culture, and improvement of the cereal crops.

Agron. 102. Grain Judging. One credit hour: one three-hour laboratory period. Second term. Sophomore year. Prerequisite, Agron. 101.

Practice in judging the cereal crops for milling, seeding, and feeding purposes.

Agron. 103. Forage Crops. Four credit hours: three lectures and one three-hour laboratory period. Third term Sophomore year.

A study of the history, distribution, adaptation, culture, and uses of forage, pasture, cover, and green manure crops. The laboratory periods are largely devoted to the identification and classification of forage plants and seeds, and purity and viability tests of the seeds.

Agron. 104. Crop Breeding. Three credit hours: two lectures and one three-hour laboratory period. Third term. Senior year. Prerequisites, Agron. 101, 103, and 107, Bot. 101.

In this course the principles of breeding are applied to field crops and detailed studies made of methods used in crop improvement work.

Agron. 105. Methods in Crop Investigations. Three credit hours: two lectures and one three-hour laboratory period. First term. Senior year. Prerequisites, Agron. 101-103.

This course deals with methods used by experiment stations in crop investigational work. The work of different stations on certain problems is classified with the view of the standardization of methods. Students are required to make reports on and criticise methods used by the different stations in attacking the problems studied.

Agron. 106. Grading Farm Crops. Three credit hours: two lectures and one three-hour laboratory period. Second term. Junior year. Prerequisites, Agron. 101, 102, and 103.

A study of market classifications and grades as recommended by the United States Bureau of Markets and practice in determining the grades.

Agron. 107. Genetics. Four credit hours: three lectures and one three-hour laboratory period. Second term. Junior year. Prerequisites, Bot. 101 and Morph. and Myc. 101.

A general course in genetics designed to prepare students for later courses in the breeding of crops in which they are specializing.

Agron. 108. Crop Rotation. Two credit hours: two lectures. Second term. Senior year. Prerequisites, Agron. 101-103 and Pet. Phy. 101-102.

This course is designed to give the student a thorough knowledge of the principles and practice of crop rotation. Rotations used in this and other states and the scientific principles involved are studied.

Agron. 109. Seminar. One credit hour: one lecture. Second term. Senior year.

The seminar is devoted largely to reports by the students on current bulletins and scientific papers dealing with problems in agronomy.

Agron. 110. Research and Thesis. Six credit hours. To be arranged. Senior year.

Here the students are given a change to do some investigational work either in the way of collecting information on some phase of agronomic work or working some problem in the laboratory, field, or greenhouse.

FOR GRADUATE STUDENTS.

Agon. 201. Biometry. Amount of credit to be determined by work accomplished. Lectures and laboratory periods.

A study of the statistical methods as applied to problems in Genetics and Plant Breeding. The methods used in the study of variations and correlations are discussed and the biometrical constants worked out by the class for certain assigned or selected data.

Agron. 202. Crop Breeding. Amount of credit to be determined by work accomplished. Lectures and laboratory periods.

The content of this course is similar to the undergraduate course in Crop Breeding, but will be adapted more to graduate students and more of a range will be allowed in choice of material to suit special cases.

Agron. 203. Research. Amount of credit to be determined by work accomplished.

With the approval of the head of the department the student will be allowed to work on any problem in agronomy or he will be given a list of suggested problems from which he may make a selection.

For Short-Course Students

Agron. 1. Cereal Crops. Three credit hours: two lectures and one three-hour laboratory period. First term. First year.

A study of the history, distribution, adaptations, uses, and culture of cereal crops, a larger part of the term being spent on corn and wheat.

Agron. 2. Forage Crops. Three credit hours: two lectures and one three-hour laboratory period. Third term. First year.

A study of the history, distribution, adaptations, uses, and culture of forage and cover crops adapted to Maryland conditions.

Agron. 3. Grain Judging. One credit hour: one three-hour laboratory period. Second term. Second year.

A laboratory course in judging grains from the standpoint of the grower, the feeder and the miller.

Agron. 4. Advanced Agronomy. Three credit hours: two lectures and one three-hour laboratory period each term. Second year.

Students specializing in agronomy are given special work in judging and grading grains, crop improvement and various other phases of crop production. Students are allowed to elect subjects in other departments for part of the time.

BOTANICAL GROUP

The purpose of the group is to supply students in Agriculture and General Science with such information as is thought fundamental to their special work and to train specialists in the different phases of the subject. This training includes such knowledge of plants as would fit one for various positions, such as teachers in high schools, normal schools, colleges, and investigators in experiment stations and government service.

BOTANY.

SUBJECT. Term:	I	II	III
SOPHOMORE YEAR.			
Plant Anatomy (Morph. and Myc. 101)	3		
Plant Physiology (Plt. Phy. 101-102)		4	3
Quantitative Analysis (Gen'l Chem. 107-108)	3	3	
Advanced Organic Chemistry (Gen'l Chem. 114-116)	4	4	4
Geology (Geol. 101)	3		
Introductory Soils (Soils 101-102)		3	3
Systematic Botany (Morph. and Myc. 102)			3
Basic R. O. T. C. (M. I. 102)	2	2	2
Elective	3	2	3
JUNIOR YEAR.			
General Plant Pathology (Plt. Path. 101)	3		
Genetics (Agron. 107)		4	
Methods in Plant Histology (Morph. and Myc. 107)		3	
Plant Ecology (Plt. Phy. 106)			3
Mycology (Morph. and Myc. 106)			3
Bacteriology (Bact. 101-103)	3	3	3
General Physics (Phys. 104)	3	3	3
Technical Composition (Eng. 104-106)	2	2	2
Elective	6	2	3

Students specializing in Morphology and Mycology will take Group A; those in Physiology, Group B; and those in Plant Pathology, Group C.

SENIOR YEAR.	I	II	III
Group A:			
Plant Morphology (Morph. and Myc. 103-105)	4	4	4
Advanced Taxonomy (Morph. and Myc. 109)	3		
Cytology (Morph. and Myc. 108)		3	
Elective	10	10	13
Group B:			
Plant Physiology (Plt. Phy. 103-105)	4	4	4
Plant Micro-Chemistry (Plt. Phy. 107)		3	
Physiological Chemistry (Bio-Chem. 101)	4		
Elective	9	10	13
Group C:			
Advanced Plant Pathology (Plt. Path. 105-107)	4	4	4
Methods in Pathology (Plt. Path. 102-104)	3	3	3
Seminar in Pathology (Plt. Path. 108-110)	1	1	1
Elective			

Description of Courses

Bot. 101. General Botany. Four credit hours: two lectures and two laboratory periods. Third term. Freshman year.

A general introduction to botany touching briefly on all phases of the subjects and planned to give the fundamental prerequisites for study in the special departments.

For Short-Course Students

Bot. 1. General Botany. Two lectures and one laboratory period. First term. First year.

A survey of the field of botony. Effort is made to give the student an understanding of how plants take up water and nutrients from the soil, how they manufacture foods, and the structures necessary to carry on these processes.

MORPHOLOGY AND MYCOLOGY

For Undergraduates.

Morp. & Myc. 101. Plant Anatomy. Three credit hours: two lectures and one laboratory period. First term. Sophomore year. Prerequisite, Bot. 101.

An anatomical study of leaves, stems, roots, flowers, and fruits. Where possible plants of economic value are used as type specimens.

Morph. & Myc. 102. Systematic Botany. Three credit hours: one lecture and two laboratory periods. Third term. Prerequisite, Bot. 101.

A study of the local flora. A study is made of floral parts and the essential relations between the groups of flowering plants. Students become familiar with the systematic key used to identify plants.

Morph. & Myc. 103-105. Plant Morphology. Four credit hours each term. Junior year. Prerequisite, Bot. 101.

A course designed to give the student a comprehensive view of the plant kingdom. It treats of the general morphological evolutionary development and relationships of the various groups of plants, based upon the examinations of selected types from each group.

Morph. & Myc. 106. Mycology. Three credit hours: two lectures and one laboratory period. Third term. Junior year.

Introductory comparative study of the morphology, life history, and classification of economic fungi.

Morph. & Myc. 107. Methods in Plant Histology. Three credit hours: one lecture and two laboratory periods. Second term. Prerequisites, Morph. and Myc. 101.

Primarily a study in technique. It includes methods of killing, fixing, imbedding, sectioning, staining, and mounting on slides of plant materials.

Morph. & Myc. 108. Cytology. Three credit hours: one lecture and two laboratory periods. Second term. Prerequisite, Morph. and Myc. 107.

The structure and life history of the plant cell.

Morph. & Myc. 109. Advanced Taxonomy. Three credit hours: one lecture and two laboratory periods. First term.

This course is offered for students who want more proficiency in systematic botany than the elementary course affords. A student who completes the course should be able to classify the grasses and other common plants of the state.

For Graduate Students.

Morph. & Myc. 201. Advanced Mycology. Two credit hours each term. One lecture and one laboratory period.

A detailed treatment of the classification, morphology and economics of the fungi, with studies of life histories in culture and identification of field material.

Morph. & Myc. 202. Special Studies of Fungi. Credit hours according to work done.

Special problems in the structure or life history of fungi or the monographic study of some group of fungi.

PLANT PHYSIOLOGY

For Undergraduates.

Plt. Phy. 101-102. Plant Physiology. Four credit hours: two lectures and two laboratory periods. Second term. Three credit hours: two lectures and one laboratory period. Third term. Sophomore year. Prerequisite, Bot. 101. (Third term given also in first term.)

A summary view of the phenomena occurring in plants; complex life of processes are interpreted in terms of simpler ones and reduced finally to the principles of physics and chemistry. The first term is devoted to a study of the constituents of plants, the synthesis of carbohydrates, fats, proteins, respiration, fermentation, and digestion. The second term deals with water requirements, elements essential to plant growth, transpiration, growth and movement.

Plt. Phy. 103. Plant Ecology. Three credit hours: one lecture and two laboratory periods. Third term. Prerequisite, Bot. 101.

A study of plants in relation to their environments. Plant formations and successions in various parts of the country are briefly treated. Much of the work, especially the practical, must be carried on in the field, and for this purpose type regions adjacent to the University are selected. It is generally necessary to take three or four trips at some distance from the University, in which case Saturdays are used for that purpose.

For Advanced Undergraduates and Graduates.

Plt. Phy. 104-106. Advanced Plant Physiology. Four credit hours each term: two lectures and two laboratory periods. Prerequisite, Plt. Phy. 101.

A detailed study of all life processes of plants. The laboratory work generally consists of special work on one or more problems that may continue through the year. Students who write theses for their undergraduate degrees, get the data from special problems assigned for the laboratory work.

Plt. Phy. 107. Plant Micro-Chemistry. Three credit hours: one lecture and two laboratory periods. Second term. Prerequisite, Plt. Phy. 101, 102.

Micro-technical methods applied to the identification of organic and inorganic substances found in the plant tissues. These methods are of especial value in the localization of plant substances and in the study of metabolism of plants.

For Graduates.

Plt. Phy. 201. Plant Biophysics. Three credit hours: two lectures and one laboratory period. Second term.

An advanced study of the application and operation of physical forces in plant physiology, and the relation of climatic conditions to plant growth. Practice in recording meterological data and the relating of such measurements to plant growth, constitute a part of the course.

Plt. Phy. 202. Special Problems in Growth and Reproduction. Two credit hours. Third term.

Plt. Phy. 203-5. Seminar. One credit hour each term.

Students are required to prepare reports of papers in the current physiological biochemical literature. These are discussed in connection with recent advances in the subject.

Plt. Phy. 206. Research. Credit hours according to work done.

Graduate students taking a major in Plant Physiology may elect physiological chemistry No. 132 and plant bio-chemistry No. 133.

PLANT PATHOLOGY

For Undergraduates.

Plt. Path. 101. General Plant Pathology. Three credit hours: two lectures and onelaboratory period. First term. Junior year.

An introductory study of the disease of plants. Especial attention is given symptoms, control measures, and microscopic study of the parasites causing diseases. As far as possible choice of material includes representatives of the principal orders of parasitic fungi.

Plt. Path. 102-104. Methods in Plant Pathology. Three credit hours each term: one lecture and two laboratory periods. Senior year. Prerequisite, Plt. Path. 101.

The first term presents an introduction to the special methods of investigating plant diseases, culture methods for plant parasites, inoculation experiments, the use of scientific instruments, making records, preparing and illustrating scientific papers. The second term is occupied with the diagnosis of plant diseases, and the third term with methods of treating diseases.

Plt. Path. 105-107. Advanced Plant Pathology. Four credit hours each term: two lectures and two laboratory periods. Senior year.

A detailed study of diseases of economic plants. Much of the laboratory work is of experimental nature and students who take pathology as a major can easily find a special problem for thesis material.

Plt. Path. 108-110. Seminar in Pathology. One credit hour each term.

Conferences and reports on plant pathological research, special problems and literature.

For Graduate Students

Plt. Path. 201. Special Problems In Pathology. Four credit hours each term.

An advanced study of causal agents, symptoms, diagnosis, and treatment of diseases. Offered for students who have had a thorough training in undergraduate pathology and physiology.

Plt. Path. 202. Research In Plant Pathology. Credit arranged according to work done.

Original investigation of special problems.

For Short-Course Students

Plt. Path. 1. Plant Diseases. Three credit hours: two lectures and one laboratory period. First term. Second year.

A practical study of diseases of plants to enable the student to recognize them in the field. A course in sprays and spraying is given in cooperation with Zoology Department in which the student is taught methods of disease control.

FORESTRY.

The course in Farm Forestry aims to give the student in agriculture sufficient instruction and practice work to enable him to handle intelligently and scientifically the farm woodlands. Such a course should be required of all students fitting themselves for farm management and be given preferably in the spring term (on account of favorable weather for field work) during the Junior or Senior Year for four-year men and during the Second Year for two-year agricultural men. At the present time Forestry is not offered as a major course, but is used to supplement the content of the other courses.

Description of Courses

For. 101. Farm Forestry. Three credit hours: two lectures and one laboratory period. Third term. Prerequisite, Bot. 101.

A study of forest botany, wood management, measurements, fire protection, nursery practice, tree planting, valuation and utilization of forest crops. The work is conducted by means of lectures and field work.

For Short-Course Students

For. 1. Farm Forestry. Three credit hours: two lectures and one laboratory period. Third term.

The content of this course is similar to that of For. 101, but is adapted to the development and needs of students in the short-course work.

DIVISION OF ANIMAL INDUSTRY

The work of this division consists in giving instruction along the lines of general animal husbandry, dairy husbandry and animal pathology; also of the live stock disease control of the State and the general betterment of live stock conditions in Maryland. The curriculum offered in this division is prepared with the idea of giving the student an opportunity to specialize along animal industry lines and at the same time give him the broad foundations in general agriculture. He is given

such instruction as should enable him (1) to conduct his own farming operations successfully; (2) to secure positions in the various lines of work which demand men trained along animal industry lines.

Equipment and Facilities for Instruction

The facilities offered by the new building are now being made use of and, as rapidly as machinery and apparatus can be provided and installed, the laboratory instruction in market milk and dairy manufacturing will be emphasized in proportion to the demand for this kind of work.

Herds of cattle and swine are maintained at the University farm and are available for instructional purposes. In addition to these animals, because of the location of the University, it is possible to make use of the excellent herds maintained by Maryland breeders and by the Federal Bureau of Animal Industry, thus giving the student a wide range of material for study. The students are urged, so far as possible, to take advantage of every opportunity to apply in a practical way the instruction given in the classroom. Advanced students are sent throughout the State to supervise advanced registry tests as well as to study general conditions as they exist on some of the leading stock farms of Maryland. These trips give the students an opportunity of observing the most up-to-date farms and farm practices and at the same time bring them into actual contact with the live stock breeders and feeders who are accomplishing the results in this State. Each year judging teams participate in the students' contest in judging dairy cattle and dairy products at the National Dairy Show. Students in any of the agricultural courses are eligible to compete for places on these teams.

ANIMAL HUSBANDRY.

SOPHOMORE YEAR. Term:	I	II	III
Introductory Study of Soils (Soils 101-102)		3	3
General Geology (Geol. 101)	3		
Agricultural Chemistry (Ind. Chem. 101)			4
Organic Chemistry (Gen'l Chem. 112-113)	3	3	
Forage Crops (Agron. 103)			3
Principles of Dairying (D. H. 101)	3		
Principles of Breeding (A. H. 104)		4	
Feeds and Feeding (A. H. 102)	4		
Management of Dairy Young Stock (A. H. 103)			3
Dairy Production (D. H. 102)		3	
Basic R. O. T. C. (M. I. 102)	2	2	2
Electives	3	3	3

JUNIOR YEAR. Term:	I	II	III
Technical Writing (Eng. 104-106)	2	2	2
Anatomy and Physiology (V. M. 101)	3		
General Bacteriology (Bact. 101-103)	3	3	3
Principles of Soil Management (Soils 103)		3	
Fertilizers (Soils 104)			4
Swine Production (A. H. 105)	3		
Beef Production (A. H. 107)		3	
Sheep Production (A. H. 108)			3
Farm Buildings (Str. Des. 107)	2		
Gas Engines (M. E. 107)		4	
Elective	4	2	5

SENIOR YEAR.			
Farm Management (F. M. 101-102)	3	3	
Animal Diseases (V. M. 102)		4	
Horse Production (A. H. 109)	3		
Tractors ()			3
Agricultural Economics (A. E. 103)			3
Animal Genetics (A. H. 113)	4		
Nutrition (A. H. 115)			2
Seminar (A. H. 116)		1	
Elective	7	9	9

DESCRIPTION OF COURSES

A. H. 101. Animal Husbandry. Four credit hours: three lectures and one laboratory period. Second term. Freshman year.

Live stock in relation to successful farm practices; types and breeds of farm animals; principles underlying successful live stock husbandry.

A. H. 102. Feeds and Feeding. Four credit hours: three lectures and one laboratory period. First term. Sophomore year.

A study of the composition and digestibility of foodstuffs, the source, characteristics and adaptability of the various food stuffs, feeding standards and the calculation of rations.

A. H. 103. Management of Dairy Young Stock. Three credit hours: two lectures and one laboratory period. Third term. Sophomore year.

The care, feeding and management of dairy young stock. Methods and practices followed in the development and improvement of the dairy herd so far as relates to breeding and selection. The keeping of herd records, feeding for advanced registry, and barn practice from the standpoint of general herd management. A study of breeds and the judging of dairy cattle.

A. H. 104. Principles of Breeding. Four credit hours: three lectures and one laboratory period. Second term. Sophomore year.

This course will cover the practical aspects of animal breeding, including heredity, variation, selection, systems of breeding and pedigree study.

A. H. 105. Swine Production. Three credit hours: two lectures and one laboratory period. First term. Junior year.

Types and breeds of swine. Care, feeding, breeding, management, economics of swine husbandry and judging.

A. H. 106. Meat and Meat Products. Three credit hours: two lectures and one laboratory period. Second term. Junior year. (Not given 1920-21.)

The slaughtering of farm live stock, and the production, handling, and care of meat on the farm.

A. H. 107. Beef Porduction. Three credit hours: two lectures and one laboratory period. Second term. Junior year.

Beef and dual purpose breeds. The care, feeding, breeding and management of beef herds; fattening, fitting for show and economics of the beef industry.

A. H. 108. Sheep Production. Three credit hours: two lectures and one laboratory period. Third term. Junior year.

Breeds of sheep, their history and adaptability. Care, feeding, breeding an management. Grades of wool. Judging and scoring.

A. H. 109. Horse and Mule Production. Three credit hours: two lectures and one laboratory period. First term. Senior year.

Breeds, their history, characteristics and adaptability. Care, feeding, breeding, breaking and training, judging and fitting for show.

A. H. 110-111. Advanced Judging. Two credit hours each term: one lecture and one laboratory period. Second and third terms. Junior or senior years. Prerequisite, A. H. 101 and A. H. 103.

Competitive judging of beef cattle, sheep and swine. During the course various trips to stock farms throughout the State will be made. Such teams as may be chosen to represent the College will be selected from among those taking this course.

A. H. 112. Advanced Breed Study. Three credit hours: two lectures and one laboratory period. Third term. Senior year. Prerequisite, A. H. 103, 105, 107, 108.

Special consideration of the history, development, and distribution of the more important breeds of live stock; important families and individuals, assigned reading and pedigree work.

A. H. 113. Animal Genetics and Statistical Methods. Four credit hours: three lectures and one laboratory period. First term. Senior or graduate. Prequisite, A. H. 104.

A study of theories regarding the heredity and transmission of characters, pure lines, Mendelism, etc. Correlation and methods of studying hereditary problems.

A. H. 114. Markets and Marketing. Three credit hours: two lectures and one laboratory period. Second term. Senior year. Prerequisites, A. H. 106, 108, 109. (Not given in 1920-21.)

History, development, organization and status of the meat, wool, and horse industries. The packing industry and its by-products. Market classes and grades of live stock, markets and study of market reports.

A. H. 115. Nutrition. Two credit hours: two lectures. Third term. Seniors or graduates. Prerequisite, A. H. 102.

Composition of the animal body, digestion, assimilation, metabolism, protein and energy requirements. Methods of investigation and studies in the utilization of food nutrients.

A. H. 116. Seminar. One credit hour: one lecture. Second term. Senior or graduate students only.

Problems, readings and discussions on subjects relating to animal husbandry.

A. H. 117-19. Research and Thesis. Two credit hours each term. Senior year.

Original investigation in problems in animal husbandry. The results of which research are to be presented in the form of a thesis.

For Short-Course Students

A. H. 1. Breeds and Judging. Three credit hours: two lectures and one laboratory period. Second term. First year.

Live stock in relation to successful farm practices, types and breeds of farm animals with special reference to the need of the practical farmer; principles and practices of successful live stock husbandry.

A. H. 2. Feeds and Feeding. Four credit hours: three lectures and one laboratory period. Third term. First year.

A study of the source, composition, characteristics and adaptability of the various foodstuffs, feeding and standards and the calculation of rations.

A. H. 3. Breeding of Animals. Four credit hours: three lectures and one laboratory period. Second term. Second year.

A course covering the practical aspects of animal breeding, including heredity, variation, selection, systems of breeding and pedigree study.

A. H. 4-6. Special Animal Husbandry. Three credit hours: two lectures and one laboratory period. Throughout the second year. Each

term of work is complete in itself and may be elected without regard to the work of the term preceding it or of the term following.

Swine Production: First term. Types and breeds of swine. Care, feeding, breeding management, economics of swine husbandry and judging.

Beef Production: Second term. Subject matter of course same as for "Swine Production."

Sheep Production: Third term. Subject matter of course same as for "Swine Production."

A. H. 7. Management of Dairy Young Stock. Three credit hours: two lectures and one laboratory period. Third term. Second year.

The care, feeding and management of dairy young stock. Methods and practices followed in the development of the dairy herd so far as relates to breeding and selection. The keeping of herd records, feeding for advanced registry, and barn practice from the standpoint of general herd management. A study of breeds and the judging of dairy cattle.

POULTRY HUSBANDRY

P. H. 101. Farm Poultry. Four credit hours: three lectures and one laboratory period. Third term. Junior year.

Care of poultry on the general farm; breeds of poultry; breeding, feeding, and selection of stock; incubation, brooking, fattening, killing, marketing, and construction.

For Short-Course Students

P. H. 1. Farm Poultry. Two lectures and one laboratory period. Third term. Second year.

A general course dealing with the care of poultry on the farm; feeding and selection of stock; poultry house construction; fattening, killing, marketing, incubation and breeding.

DAIRY HUSBANDRY

The courses in Dairy Husbandry are organized with a view to giving the student a working knowledge of the basic principles underlying successful dairy production, market milk, and commercial dairying. Graduates from these courses should be fitted to take up dairy farming, teaching or experiment station work. However, if teaching or investigation is elected, it is advisable for students to remain for the graduate work offered. In the Dairy Husbandry courses use is made of the College of Agriculture herd and newly-equipped milk testing laboratory. A new dairy manufacturing laboratory is in process of completion and should be available during the latter part of the present year.

The Head of this Department has direct charge of the dairy work in the College of Agriculture, Experiment Station and Extension Service.

Official connection with the U. S. Dairy Division also gives the Dairy Husbandry classes free access to the dairy research laboratories of the Government in Washington and the Government Farm herds at Beltsville.

As a State, Maryland has splendid dairy possibilities as yet not fully realized. Fertile soil, long growing seasons, mild winters, and splendid markets made easily accesible by good roads, assure a bright future in the production of dairy cattle and market milk in this State.

Whenever possible dairy students are given opportunities to do advanced registry testing about the state during week-ends and vacations. This service not only pays $3.00 per day for transportation, but gives the dairy student a splendid opportunity to become acquainted with methods of feeding and care practised by the leading breeders of pure-bred cattle within the state. This practice is invaluable to those students intending to go back to their own farm or to engage in the production of pure-bred cattle.

The Department of Dairy Husbandry, supplementing the work of other subject matter departments, offers three major lines of work: (1) Dairy production, covering the care, feeding, and management of dairy cattle; (2) Market Milk, dealing with the factors which control quality and quantity in milk; (3) Commercial Dairying, which takes up the processing and manufacture of dairy products with special reference to the needs of the state in this direction. Sufficient opportunities for electives are given so that men intending to go back to their own farms may register for subjects of prime importance to their own particular farm problems.

CURRICULA IN DAIRY HUSBANDRY.

SOPHOMORE YEAR. Term:	I	II	III
Introductory Soils (Soils 101-102)		3	3
General Geology (Geo. 101)	3		
Organic Chemistry (Gen'l Chem. 112-113)	3	3	
Agricultural Chemistry (Ind. Chem. 101)			4
Public Speaking (104-106)	1	1	1
Forage Crops (Agron. 103)			4
Feeds and Feeding (A. H. 102)	4		
Principles of Breeding (A. H. 104)		4	
Dairy Young Stock (A. H. 103)			3
Principles of Dairying (D. H. 101)	3		
Dairy Production (D. H. 102)		3	
History of Dairy Cattle (D. H. 103)			2
Basic R. O. T. C. (M. I. 102)	2	2	2
Elective	2	4	1

JUNIOR YEAR. Term:	I	II	III
Principles of Economics (R. E. 101-102)	3	3	
Technical Writing (Eng. 104-106)	2	2	2
General Bacteriology (Bect. 101-103)	3	3	3
Soil Bacteriology (Soils 107)			3
Anatomy and Physiology (V. M. 101)	3		
Advanced Judging (A. H. 111)			2
Farm Dairying (D. G. 104)	3		
Commercial Dairying (D. H. 105)		3	
Judging of Dairy Products (D. H. 106)			2
Agricultural Education (105)			3
Farm Accounts (A. E. 106)		3	
Electives	3	3	2
SENIOR YEAR.			
Forging and Pipe-fitting (Shop 2)			1
Farm Management (F. M. 101)	3		
Cooperative Marketing (A. E. 105)			3
Animal Diseases (V. M. 102)		4	
Dairy Bacteriology (Bact. 104-106)	3	3	3
Market Milk (D. H. 107)	3		
Advanced Testing (D. H. 108)		3	
Research and Thesis (D. H. 110-112)	2	2	2
Electives	6	5	8

DAIRY HUSBANDRY

D. H. 101. Principles of Dairying. Three credit hours: two lectures and one laboratory period. First term. Sophomore year.

The relationship of dairying to general agriculture; the extent of the dairy business and value of dairy products; milk, its secretion, character and composition and the fundamentals of dairy cattle, care, feeding and management.

D. H. 102. Dairy Production and Barn Practice. Three credit hours: two lectures and one laboratory period. Second term. Sophomore or Junior year.

The care, feeding and management of dairy cattle, including feeding standards, the balancing of rations, selections of feeds, systems of herd feeding, silage and silos, soiling systems and pastures, the selection, care and feeding the sire, dairy herd development and management, methods of keeping and forms for herd records, dairy barn construction, arrangement and equipment, requirements for advanced registry and management of tests, dairy cost accounts and barn practices which influence quantity and quality in milk.

D. H. 103. History and Development of Dairy Cattle. Two credit hours: two lectures. Third term. Sophomore year.

A study of the origin, history, development and characteristics of the dairy breeds; the value of official records; bull associations, cow testing associations.

D. H. 104. Farm Dairying. Three credit hours: two lectures and one laboratory period. First term. Junior year.

Composition of milk, butter and cheese; methods of testing for butterfat and for total solids; equipping the stable and milk house; how bacteria and dirt get into milk; how they may be kept out; surface coolers and precooling; milk cooling tanks; washing and sterilization of utensils.

D. H. 105. Commercial Dairying. Three credit hours: one lecture and two laboratory periods. Second term. Junior year. Given in 1920-1921 if equipment is available.

Power separators; pasteurizers; churns and butter workers; the ripening of cream; churning, washing, salting, working, packing, scoring and selling butter.

D. H. 106. Judging Dairy Products. Two credit hours: one lecture and one laboratory period. Third term. Junior year.

Competitive judging of milk, butter and cheese. Various outside lecturers on these subjects will address the class and trips will be taken to butter, cheese and milk markets for the purpose of familiarizing the students with the commercial quality of milk, butter and cheese. Such teams as may be chosen to represent the College will be selected from those electing this course.

D. H. 107. Market Milk. Three credit hours: two lectures and one laboratory period. First term. Senior year.

A study of market milk conditions; requirements of city milk trade; the production of milk; pasteurization of milk; milk and its relation to the public health; the food value of milk; methods of handling market milk and market cream for direct consumption; the transportation of milk; Babcock testing of milk and milk products. In this course visits will be made to dairies and to milk plants.

D. H. 108. Advanced Course in Milk Testing. Three credit hours: one lecture and two laboratory periods. Second term. Senior year.

This course includes the determination of moisture and dry matter in milk and dairy products; various tests for fat and casein; testing of butter and oleomargine, adulterations and preservative.

D. H. 109. Seminar. One credit: one lecture. Second Term. Senior year for graduate students.

The Seminar is devoted largely to reports by students on current bulletins and scientific papers in dairy production and market milk problems.

D. H. 110-112. Research and Thesis. Six credit hours: to be arranged. Senior year.

Students are given opportunities to conduct investigational work, either in collecting information or original research in Dairy Production and Market Milk.

For Graduate Students

D. H. 201. City Milk Supply. Two credit hours: two lectures. First term. Graduates.

Securing a milk supply for city consumers; methods of buying from producers; the transportation of milk; milk contractors; systems of handling milk in the city milk plants; the sterilization of utensils; systems of delivery to consumers.

D. H. 202. Dairy Farm and City Milk Inspection. Two credit hours: two lectures. Second term. Graduates.

Early attempts at control and the development of milk inspection; systems of dairy inspection; systems of milk plant inspection; dairy farm score cords; dairy plant score cards; relation of milk to public health; grading milk; milk standards; milk and cream regulations; methods of appointment and duties of dairy and milk inspectors; general improvement and control of milk supplies of cities and towns.

D. H. 203. Research. Nine credits: To be arranged.

With the approval of the head of the department, students will be allowed to work on any problem in dairy production or market milk they may choose, or be given a list of problems from which to select a research project.

In so far as schedules permit, students will be encouraged to visit the U. S. Dairy Division Laboratories and become acquainted with the dairy research problems in process and the methods of attack. This acquaints the student with the broad phases of research in dairy production and market milk.

For Short-Course Students

D. H. 1. Principles of Dairying. Three credit hours: two lectures and one laboratory period. First term. First year.

Relationship of dairying to general agriculture; the extent of the dairy business and value of dairy products; milk, its secretion; character and composition; and fundamentals of dairy cattle, care, feeding and management.

D. H. 2. Dairy Production and Barn Practice. Three credit hours: two lectures and two laboratory periods. Second term. Second year.

The care, feeding and management of dairy cattle, including feeding standards, the balancing of rations; selections of feeds, systems of herd feeding, silage and silos, soiling systems and pastures, the selection, care and feeding the sire, dairy herd development and manage-

ment, methods of keeping and forms for herd records, dairy barn construction, arrangement and equipment, requirements for advanced registry and management of tests, dairy cost accounts and barn practices which influence quantity and quality in milk.

D. H. 3. Farm Dairying. Three credit hours: two lectures and one laboratory period. First term. Second year.

Composition of milk, butter and cheese; methods of testing for butterfat and for total solids; equipping the stable and milk house; how bacteria and dirt get into milk; how they may be kept out; surface coolers and precooling; milk cooling tanks; washing and sterilization of utensils.

D. H. 4. Judging of Dairy Products. Two credit hours: one lecture and one laboratory period. Third term. Second year.

Competitive judging of milk, butter and cheese. Various outside lecturers on these subjects will address the class and trips will be taken to butter, cheese and milk markets for the purpose of familiarizing the students with the commercial quality of milk, butter and cheese. Such teams as may be chosen to represent the University will be selected from those electing this course.

BACTERIOLOGY

BACTERIOLOGY.

SOPHOMORE YEAR. Term:	I	II	III
Feeds and Feeding (A. H. 102)	4		
Principles of Breeding (A. H. 104)		4	
Principles of Dairying (D. H. 101)	3		
Introductory Study (Soils 101-102)		3	3
Entomology (Zool. 106)			3
Quantitative Analysis (Gen'l Chem. 107-108)	3	3	
Agricultural (Ind. Chem. 101)			4
Organic (Gen'l Chem. 112-113)	3	3	
Basic R. O. T. C. (M. I. 102)	2	2	2
Electives	3	3	6

JUNIOR YEAR.			
General Plant Pathology (Plt. Path. 101)	3		
Farm Dairying (D. H. 103)		4	
General (Bact. 101-103)	3	3	3
Mycology (Morph. and Mycol. 106)			3
Physiological Chemistry (Bio-Chem. 101)	4		
Technical Writing (Eng. 104-106)	2	2	2
Economic Entomolgy (Zool. 108)		4	
Electives	5	4	9

SENIOR YEAR. Term:	I	II	III
Methods in Pathology (Plt. Path. 102)		3	
Dairy (Bact. 104-106)	3	3	3
Advanced (Bact. 107-109)	3	3	3
Market Milk (D. H. 107)	5		
Milk Tseting (D. H. 108)		4	
Soil Bacteriology (Soils 107)			3
Seminar (Bact. 117-119)	1	1	1
Electives	5	3	7

BACTERIOLOGY

Bact. 101-103. General Bacteriology. Three credit hours each term: one lecture and two laboratory periods. Junior year.

This subject includes the following topics: A brief history of bacteriology; microscopy; bacteria and their relation to nature; morphology, classification, identification of species and the different methods of sterilization and disinfection; preparation of culture media, isolation and cultivation of aerobes and anaerobes; examination of cultures; microscopic examination of bacteria; stains with their composition, classification and use; vital activities of bacteria; their relation to disease; use of experimental animals; bacteria in water, milk and soil; cultural characters of representative organisms from the following genera: micrococcus, streptococcus, bacterium, bacillus, pseudomonas, streptothrix, protozoa. filtrable viruses and immunity.

Bact. 103-A. Special for Home Economics Students only. Three credit hours: third term. One lecture and two laboratory periods. Junior year.

The subject matter of the course will consist largely of the study of the more important bacteria, yeasts and fungi ordinarily encountered in the field of domestic economy.

Bact. 104-106. Dairy Bacteriology. Three credit hours each term: one lecture and two laboratory periods. Senior year. Prerequisites, Bact. 101-103.

This course deals with the following topics: historical sketch; relation of bacteria to dairy products; preparation of media; plating by the dilution method; sources of contamination, including stable atmosphere, udder, exterior of cows and attendants; kinds of utensils and their sterilization; kinds of bacteria in milk and their development; direct microscopic examination, sedimentation test and centrifugalization, fresh and old milk; baby and special milks, market milk, graded milk; certified milk, sour milk, whey, cream, butter cheese, condensed milk, powdered milk and milk starters; pasteurization by flash and slow method; changes inmilk due to bacteria and milk as a carrier of disease.

Bact. 107-109. Advanced Bacteriology. Two to three credit hours each term: two to three laboratory periods. Senior year. Prerequisite, Bact. 101-103.

This course is intended primarily to give the student a chance to develop his own initiative. He will be allowed to decide upon his project and work it out as much as possible in his own way under proper supervision. In this manner he will be able to apply his knowledge of bacteriology to a given problem. He will also get to know something of the methods of research and will receive a valuable training in obtaining careful and accurate data.

Bact. 110-112. Thesis. Two credit hours each term: senior year Optional.

The investigation of a given project, the results of which are to be presented in the form of a thesis and submitted for credit toward graduation.

Bact. 113-115. Seminar. One credit hour each term: senior year. Required of seniors taking Bact. 107-109 and all graduate students. The work will consist of reports on individual projects and on recent scientific literature.

For Graduate Students

Bact. 201-203. Research Bacteriology. Three credit hours each term: three laboratory periods by assignment. Prerequisite, Bact. 101-103 and in certain cases 104-106 and 107-109, depending upon the project.

For Short-Course Students

Bact. 1. Agricultural Bacteriology. Two credit hours: two lectures. Second term. Second year.

An elementary course touching upon the following topics: The general characters of micro-organisms; fermentation; putrefaction and decay; nature's food supply; the carbon cycle; decomposition of nitrogenous compounds; nitrification and denitrification; the manure heap and sewage; reclamation of lost nitrogen; bacteria and soil minerals; bacteria in water and milk; control of milk supply; bacteria in butter and cheese making; alcohol, vinegar, sour kraut, tobacco, silage and flax; preservation of food products; resistance against parasitic bacteria; tuberculosis and other germ diseases and parasitic diseases of plants.

PRE-VETERINARY.

SOPHOMORE YEAR. Term:	I	II	III
Feeds and Feeding (A. H. 102)	4		
Principles of Breeding (A. H. 104)		4	
Principles of Dairying (D. H. 101)	3		
Introductory Study of Soils (Soils 101-102)		3	3
General Geology (Geol. 101)	3		
Agricultural Chemistry (Ind. Chem. 101)			4
Organic Chemistry (Gen'l Chem. 112-113)	3	3	
Forage Crops (Agron. 103)			3
Management of Dairy Young Stock (A. H. 103)			3
Dairy Production (D. H. 102)		3	
Basic R. O. T. C. (M. I. 102)	2	2	2
Electives	3	3	3

JUNIOR YEAR.

General Bacteriology (Bact. 101-103)	3	3	3
Anatomy and Physiology (V. M. 101)	3		
Technical Writing (Eng. 104-106)	2	2	2
Swine Production (A. H. 105)	3		
Beef Production (A. H. 107)		2	
Sheep Production (A. H. 108)			3
Advanced Judging (A. H. 110-111)		2	2
Electives	6	7	7

SENIOR YEAR.

Dairy Bacteriology (Bact. 104-106)	3	3	3
Animal Diseases (V. M. 102)		4	
Horse Production (A. H. 109)	3		
Animal Genetics (A. H. 113)	4		
Nutrition (A. H. 115)			2
Electives	7	10	12

VETERINARY MEDICINE

V. M. 101. Anatomy and Physiology. Three credit hours: three lectures. First term. Junior year.

A brief study of the structure of the animal body with a view to recognizing the abnormal as contrasted with the normal and to the gaining of a knowledge of the inter-relationships between the various organs and parts, both as to structure and function.

V. M. 102. Animal Diseases. Four credit hours: three lectures and one laboratory period. Second term. Senior year.

A brief study of diseases of domestic animals, both infectious and non-infectious. Early recognition of disease; hygiene, sanitation, and prevention; first aid.

For Short-Course Students.

V. M. 1. Animal Diseases. Three credit hours: two lectures and one laboratory period. Second term. Second year.

Briefer course on the diseases of domestic animals; methods of recognizing disease in its early stages; relation of care and sanitation to disease.

GENERAL ANIMAL INDUSTRY COURSES

Seminar. A forum for the discussion of subjects relating to animal industry. Open to juniors, seniors and graduate students only.

Research and Thesis. The work will be arranged with each student individually. He may select some topic or problem in which he is especially interested and which will require independent investigation.

SOILS

The Department of Soils gives instruction in the physics, chemistry, and biology of the soil, the courses being designed to equip the future farmer with a complete knowledge of his soil and also to give adequate training to students who desire to specialize in soils. Students who are preparing to take up research or teaching are expected to take graduate work in addition to the regular undergraduate courses that are offered. The department possesses the necessary equipment and facilities for the instruction in these subjects, and in addition affords opportunities for the student to come in contact with the research of the Agricultural Experiment Station, especially in the pot-culture laboratories and on the experimental fields at the station and in other parts of the State.

Graduate students will find unusual opportunities to fit themselves for teaching soils in agricultural colleges, to conduct research in experiment stations, and to carry on work with the Bureau of Soils, United States Department of Agriculture.

SOILS.

SOPHOMORE YEAR. Term:	I	II	III
Forage Crops (Agron. 103)			4
General Geology (Geol. 101)	3		
Soil Physics and Management (Soils 101-102)		3	3
Organic Chemistry (Gen'l Chem. 112-113)	3	3	1
Agricultural Chemistry (Ind. Chem. 101)			4
Plant Physiology (Plt. Phy. 101-102)	3	4	
Physics General (Phys. 104)	3	3	3
Basic R. O. T. C. (M. I. 102)	2	2	2
Electives	4	3	2

JUNIOR YEAR. Term:	I	II	III
Technical Composition (Eng. 104-106)	2	2	2
Principles of Economics (Econ. 101-102)	3	3	
General Bacteriology (Bact. 101-102)	3	3	
Soil Bacteriology (Soils 107)			4
Quantitative Analysis (Gen'l Chem. 107-108)	3	3	
Determinative Mineralogy (Gen'l Chem. 120)			3
Fertility and Fertilizers (Soils 103-105)	3	3	3
Elective	3	3	5

SENIOR YEAR.			
Farm Management (F. M. 101-102)	3	3	
Methods of Crop Investigation (Agron. 106)	3		
Crop Rotations (Agron. 109)		2	
Soil Survey and Classification (Soils 106)	3		
Soil Technology (Soils 111-113)	3	3	3
Surveying and Drainage			3
Seminar (Soils 115)		1	1
Methods of Soil Investigation (Soils 114)			2
Elective	5	8	8

Description of Courses

Geol. 101. General Geology. Three credit hours: two lectures and one laboratory period. First term.

A text-book, lecture, and laboratory course, dealing with the principles of geology and their application to agriculture. While this course is designed primarily for agricultural students in preparation for technical courses, it may be taken as a part of a liberal education.

Soils 101-102. Soil Physics and Management. Three credit hours each term: two lectures and one laboratory period. Second and third terms. Prerequisite, Geol. 101.

The physical and chemical properties of soils in their relation to tillage operations, preparation of seed beds, and the maintenance of soil fertility. Field excursions are made to study soil formation and their physical properties. The practical work consists chiefly of experiments and demonstrations in soil physics.

Soils 103-105. Soil Fertility and Fertilizers. Three credit hours each term: one lecture and two laboratory periods. Farm manures the first and second terms; commercial fertilizers the third term. Prerequisite, Soils 101-102.

The object of this course is to familiarize the student with the details of soil management. It includes the practical application of the principles of soil physics to methods of tillage and cropping and a study of the factors governing the use of manures and fertilizers. The practical work includes special studies of the soils from the colleges and station farms that have been subjected to various treatments.

Soils 106. Soil Surveying and Classification. Three credit hours: one lecture and two laboratory periods. First term. Prerequisite, Soils, 101-102.

A study of the principal soil regions, series, and types of the United States, and especially of the soils of Maryland, as to formation, composition, and value agriculturally. The practical work consists chiefly in identification of soil types and in map making.

Soils 107. Soil Bacteriology. Four credit hours: two lectures and two laboratory periods. Third term. Prerequisite, Bact. 101-102.

A study of the micro-organisms of the soil in relation to fertility. It includes the study of nitrogen transformers, etc., and the injurious soil organisms. The work is carried on in the laboratory, lectures, and library.

Soils 108-110. Thesis. Two credit hours. Senior year.

Some special problem is assigned to each student, who is expected to embody the results of the investigation in a thesis.

For Advanced Undergraduate and Graduate Students

Soils 111-113. Soil Technology. Three credit hours each term: one lecture and two laboratory periods. Prerequisites, Soils 101-102, Chem. 101-103.

A study of methods used by experiment stations in soil problems and technique of laboratory manipulation. Laboratory work deals with soil problems in which the student is interested and includes a study of the effect of different manures and fertilizers as determined by pot and plot culture experiments.

Soils 114. Methods of Soil Investigation. Two credit hours. Third term.

The course includes a critical study of the methods used by experiment stations in soil investigational work.

Soils 116-116. Seminar. One credit hour. Second and third terms.

The seminar periods are devoted largely to the discussion of current bulletins and scientific papers on soil topics.

For Graduate Students.

Soils 201-203. Special Problems and Research. Five to ten credit hours. The year. Lectures and practice to be arranged.

Original investigations of problems in soils and fertilizers.

For Short-Course Students

Soils 1. Soil Management. Three credit hours: two lectures and one laboratory period. Third term.

A study of the physical and chemical conditions of soils in their relation to profitable agriculture. Special attention is given to the application of physics and chemistry to the management of Maryland Soils.

Soils 2. Manures and Fertilizers. Three credit hours: two lectures and one laboratory period. First term.

Lectures and recitations on the care and utilization of farm manures; on the sources of fertilizer materials; methods of valuation and the effect of fertilizers on different farm crops.

FARM EQUIPMENT

The Department of Farm Equipment was organized from an outgrowth of the increased demands for farm machinery and other farm equipment as labor-saving devices.

The department has charge of farm machinery, farm automobiles, trucks and tractors, farm motors and gas engines, farm mechanics, farm buildings, conveniences of the home, and will take up other courses as the needs demand.

FARM MANAGEMENT

In this department are grouped courses in farm management, agricultural economics, and markets, together with the kindred subject of rural organization.

Farm management has been defined as the business of the individual farmer to so organize his business as to produce the greatest continuous profit. This can be done, however, only when the organization is in accordance with the broader principles of agricultural economics. It requires not only knowledge of the many factors involved in the production of crops and animals, but also administrative ability to properly coordinate them into the most efficient farm organization.

The aim of the farm management course is to assist the student to perceive the just relationship of the several factors of production and disposition as applicable to local conditions and to develop in him executive and administrative capacity. Students well trained in farm management are in demand for county agent work, experiment station or United States Government investigation, and college or secondary school teaching.

Agricultural economics considers the fundamental principles underlying production, distribution, and consumption, more especially as they bear upon agricultural conditions. Labor, land and capital are considered in their relationship to agriculture. The need for more exact business records on the farm is forcing itself imperatively on the minds of all students of agricultural economics. To meet this demand a

course is offered in farm accounting. This course is not elaborate but is designed to meet the demand for a simple yet accurate system of farm business records.

The comparative isolation of country life tends naturally to individual rather than cooperative effort. The course in rural organization aims to show the student the advantages of combined effort in country communities, to sketch the history of rural organization with a discussion of its failures and successes, and to point out practical methods of organizing rural communities for mutual and individual benefit.

FARM MANAGEMENT.

SOPHOMORE YEAR. Term:	I	II	III
Introductory Study of Soils (Soils 101-102)		3	3
General Geology (Geol. 101)	3		
Principles of Breeding (A. H. 104)		4	
Forage Crops (Agron. 103)			4
Plant Anatomy (Morph. and Myc. 101)	3		
Plant Physiology (Plt. Phys. 101-102)		4	3
Feeds and Feeding (A. H. 102)	4		
Meat and Meat Products (A. H. 106)		3	
Poultry (P. H. 101)			4
Pomology (Hort. 101)	4		
Grain Judging (Agron. 102)		1	
Basic R. O. T. C. (M. I. 102)	2	2	2
Electives	2	1	2

JUNIOR YEAR.

Technical English (Eng. 104-106)	2	2	2
Principles of Economics (Econ. 101-102)	3	3	
Agricultural Economics (A. E. 101)			3
Fertilizers (Soils 105)			3
Farm Accounting (A. E. 104)			3
Farm Machinery (F. E. 101)	3		
Bacteriology (Bact. 101-102)	3	3	
Surveying and Drainage (————————)			4
Grading Grain Crops (Agron. 106)		3	
Electives	6	6	2

SENIOR YEAR.

Farm Management (F. M. 101-102)	3	3	
Markets and Marketing (A. E. 102)		3	
Cooperative Marketing (A. E. 103)			3
Community Study (R. O. 101-103)	2	2	2
Principles of Rural Organization (R. O. 104)	3		
Electives	9	9	12

Description of Courses

F. M. 101-102. Farm Management. Three credit hours each term: three lectures. First and second term.

A study of the business of farming from the standpoint of the individual farmer. This course aims to connect the principles and practice which the student has acquired in the several technical courses and to apply them to the development of a successful farm business.

AGRICULTURAL ECONOMICS

A. E. 101. Studies in Agricultural Economics. Three credit hours. Third term. Prerequisite, A. E. 101-102.

A study of the economic adaptations and adjustments necessary on the part of the agriculturist to meet the changing economic conditions. Population flows, land tenure, farm incomes, farm labor, agricultural credit, and price movements will receive special consideration.

A. E. 102. Markets and the Marketing. Three credit hours. Second term. Prerequisite, A. E. 101-102.

An analysis of the present system of transporting, storing, and distributing farm products and a basis for intelligent direction of effort in increasing the efficiency of marketing methods.

A. E. 103. Cooperative Marketing. Three credit hours. Third term. Prerequisite, A. E. 101-102.

A study of the cooperative marketing, endeavors of farmers with a view to developing methods of distributing perishable and specialized farm products.

A. E. 104. Farm Accounting. Four credit hours: three lectures and one laboratory period. First term.

A study of the principles underlying farm accounting, emphasizing cost accounting and analysis of farm business.

RURAL ORGANIZATION

R. O. 101-103. Elements of Community Study. Three credit hours each term. The year.

A course dealing with the fundamental principles of community development.

R. O. 104. Principles of Rural Organization. Three credit hours. First term.

A study of the historical and comparative development of farmers' cooperative organizations, stressing particularly present tendencies.

For Short-Course Students

F. M. 1. Farm Management. Two lectures and one laboratory period. First term.

A course parallel with F. M. 101-102 arranged for the students of the short agricultural courses.

A. E. 1. Farm Accounting. Two lectures. Second Term.

A course parallel with A. E. 106. For students of the short agricultural courses.

R. O. 1. Rural Organization. Three lectures. Third term.

A survey of the functions, scope, and present forms of organization of rural interests primarily for economic purposes.

DEPARTMENT OF ZOOLOGY.

The training of economic zoologists and the preparation of students for entrance to the Medical School is the function of this department, in addition to teaching zoology, as a basic science.

In the preparation of entomologists, the aim is to give a broad training in zoology and allied sciences, with specialization in the senior year. All the work of the State and Station Entomologist is done through this department, thus offering better opportunities for students desiring to specialize in entomology.

The pre-medical curriculum includes the scheduled subjects as prescribed by the Council on Medical Education of the American Medical Association for the two-year pre-medical course. "Students registered for the pre-medical course now offered in the Department of Economic Zoology, may, after the completion of three years' work as prescribed, receive the degree of Bachelor of Science upon the successful completion of the first year in the School of Medicine of the University."

Close cooperation is maintained with the Bureau of Fisheries and the Maryland Conservation Commission in the development and conservation of Maryland's Water Food Resources.

ZOOLOGY.

FRESHMAN YEAR. Term:	I	II	III
General Zoology (Zool. 101-102)	3	3	
Composition and Rhetoric (Eng. 101-103)	3	3	3
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
General Botany (Bot. 101)			4
Military Instruction (Basic R. O. T. C. 101)	2	2	2
Electives	6	6	5
SOPHOMORE YEAR.			
Histology (Zool. 103)	4		
Embryology (Zool. 104-105)		4	4
General Entomology (Zool. 107)			3
Quant. Analysis (Gen'l Chem. 107-108)	3	3	
General Physics (Phys. 104)	2	2	2
General Physics Lab. (Phys. 104)	1	1	1
Exposition and Scientific Thought (Eng. 104-106)	2	2	2
Military Instruction (Basic R. O. T. C. 102)	2	2	2
Electives	4	4	4

JUNIOR YEAR. Term:	I	II	III
Insect Morphology (Zool. 108)	2		
Economic Entomology (Zool. 109-110)		4	4
Insecticides and Their Application (Zool. 118)		2	
Organic Chemistry (Gen'l Chem. 112-113)	3	3	
General Bacteriology (Bact. 101-103)	3	3	3
Electives	9	5	10

SENIOR YEAR.			
Bio. Chemistry (101-102)	4		3
Economic Entomology (Zool. 111-113)	5	5	5
Thesis (Zool. 115-117)	2	2	2
Electives	6	10	7

The student must secure the approval of the head of the division in his elections.

PRE-MEDICAL.

FRESHMAN YEAR.			
General Zoology (Zool. 101-102)	3	3	
Mammalian Anatomy (Zool. 102-a)			1
Composition and Rhetoric (Eng. 101-103)	3	3	3
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
Language (French or German)	3	3	3
General Botany (Bot. 101)			4
Military Instruction (Basic R. O. T. C. 101)	2	2	2
Electives	3	3	1

SOPHOMORE YEAR.			
Histology (Zool. 103)	4		
Embryology (Zool. 104-105)		4	4
Exposition and Scientific Thought (Eng. 104-106)	2	2	2
Organic Chemistry (Gen'l Chem. 112-113)	3	3	
Physics 101, 102, 103	5	5	5
Language (French or German)	3	3	3
Military Instruction (Basic R. O. T. C. 102)	2	2	2
Electives			2

JUNIOR YEAR.			
Comparative Morphology of Vertebrates (Zool. 106)			4
Quant. Chemistry (Gen'l Chem. 107-108)	3	3	
General Bacteriology (Bact. 101-103)	3	3	3
Language (French or German)	3	3	3
General and Applied Psychology (Prin. Ed. 105-106)		2	2
Electives	8	6	5

SENIOR YEAR.			
Bio. Chemistry (101-102)	4		3
Medical Entomology (Zool. 119)	3		
Thesis (Zool. 115-117)	2	2	2
Advanced Bacteriology (Bact. 104-106)	2	2	2
Language	3	3	3
Electives	3	10	7

The student must secure the approval of the head of the division in his elections.

For Undergraduates

Zool. 101-102. General Zoology. Three credit hours: two lectures and two laboratory periods. First and second terms.

The relationships of animals, their general form and structure, their responses to environing conditions and their development and evolution are discussed in a broad manner.

Zool. 102a. Mammalian Anatomy. One credit hour: one laboratory period. Third term. Prerequisite, Zool. 101-102.

Required of pre-medical students.

Zool. 103. Normal Histology. Four credit hours: two lectures and two laboratory periods. First term. Prerequisite, Zool, 101-102.

A study of the normal tissues, chiefly of the mammals; covers the ground usually assigned to general histology.

Zool. 104-105. Embryology. Four credit hours each term: two lectures and two laboratory periods. Second and third terms. Prerequisite, Zool. 101-102.

This course is based on the chick.

Zool. 106. Comparative Morphology of Vertebrates. Two to four credit hours: laboratory periods to be arranged. Third term. Prerequisite, Zool. 103-105.

Lectures and laboratory work on one or more of the following systems of organs: skeletal, nervous, and circulatory.

Zool. 107. Entomology. Three credit hours: two lectures and one laboratory period. Third term. Prerequisite, Zool. 101-102.

General principles of structural and systematic entomology. Lectures, recitations, laboratory work and field excursions. A collection of insects is required, properly arranged to orders.

Zool. 108. Insect Morphology. Two credit hours: two laboratory periods. First term. Prerequisite, Zool. 107.

A course in morphology designed to prepare students for work in economic entomology.

Zool. 109-110. Economic Entomology. Four credit hours each term: two lectures and two laboratory periods. Second and third terms. Prerequisite, Zool. 107.

Morphology of type insects to acquaint the student with special structures bearing on insect control; insect biology, including methods of study. The theory and practice of insect control.

Zool. 111-113. Economic Entomology. Five credit hours each term: three lecture hours and two laboratory periods. The year. Prerequisite, Zool. 109-110.

Problems in applied entomology, including life history, ecology, distribution, parasitism and control.

Zool. 114. Systematic Entomology. Two credit hours: two laboratory periods. First term.

The student selects some group in which he is particularly interested and makes a detailed study of it. The course requires considerable field work and is supplemented by laboratory periods and frequent conferences.

Zool. 115-117. Thesis. Two credit hours each term: laboratory periods to be arranged. The year.

The intensive investigation of some zoological subject, the results of which are incorporated in a paper which is submitted as part requirement for graduation.

Zool. 118. Insecticides And Their Application. Two credit hours: one lecture and one laboratory period. Second term.

The principles of insecticides, their chemistry, preparation and application; construction, care and use of spray and dusting machinery; fumigation and mechanical controls.

Zool. 119. Medical Zoology. Three credit hours: three lectures. tures. First term. Prerequisite, Zool. 101-102.

The relation of animals to disease, directly and as vectors of pathogenic organisms; the control of pests of man.

Zool. 120-121. Scientific Delineation And Preparations. One credit hour each term: one laboratory period. First and second terms.

Photography, photomicrography, drawing freehand and with camera lucida, lantern-slide making, optical projection, preparation of exhibit and museum material.

Zool. 122. Horticultural Entomology. Three credit hours: two lectures and one laboratory period. Third term. Prerequisite, Zool. 106.

Lectures, laboratory and field work on the morphology, biology and control of insect pests of horticultural crops.

Zool. 123-125. Seminar. One credit hour each term: one lecture. The year. The staff.

Meetings to discuss zoological topics; to review the literature of the subject and in general to acquaint the student with his chosen field.

Zool. 126. Introduction to Agriculture. Credit hours and laboratory periods to be arranged. Not offered in 1920-21. Prerequisite, Zool. 101-102 and Botany 101.

The biology of the fresh and tidal waters of Maryland. A qualitative study of the aquatic organisms with special reference to their possibilities in sustaining aquatic life.

For Graduate Students

Zool. 201. Investigations in Entomology. Credit according to work done.

Studies of minor problems in morphology, taxonomy and applied entomology under the direction of a member of the staff, with particular reference to preparation for individual research.

Zool. 202. Research in Entomology. Credit according to work done.

Advanced students having sufficient preparation may, with the approval of the head of the division, undertake supervised research in morphology, taxonomy or biology and control of insects. Frequently the student may be allowed to work on Station or State Horticultural Department projects. The student's work may form a part of the final report on the project and be published in bulletin form.

Zool. 203. Advanced Economic Entomology. One credit hour: one lecture. Second term.

Lectures discussing the latest theories and practices in applied entomology.

For Short-Course Students

Zool. 1. Animal Pests. Two lectures and two hours laboratory. Second term.

A study of the wild animals of the farm with practice in identification; designed to enable the farmer to recognize the beneficial and noxious animals on Maryland farms.

Zool. 2. Sprays and Spraying. One lecture and three hours laboratory. Third term.

Preparation and application of insecticides, together with a consideration of other methods of control.

Zool. 3. Beekeeping. One laboratory period. Third term.

Consideration of the underlying principles of successful beekeeping, with practice in preparation of equipment and the manipulation of bees. Not offered 1920-21.

SHORT COURSES IN AGRICULTURE

A. Students who have had four years of high school training or its equivalent may follow a two-year curriculum of regular college courses designated by the dean. A certificate is granted by the college upon completion of the work. If, after the student has been awarded a certificate, he is desirous of taking work for a degree, he may continue for two more years with a regular college curriculum.

B. Another two-year curriculum, commonly known as "The Two-Year Agricultural Course," is sub-collegiate in nature. To enter this two-year work the applicant must have preparation at least equal to the work given in the seventh grade of the Maryland public schools. At the conclusion of the course students having completed the regular work as outlined are given a certificate stating the studies pursued during the time spent in the college. No college credit toward a degree is given for work done in this course.

TWO-YEAR AGRICULTURE.

FIRST YEAR. Term:	I	II	III
Cereal Crops (Agron. 1)	3		
Forage Crops (Agron. 2)			3
General Soils (Soils 1)			3
Principles of Dairying (D. H. 1)	3		
Breeds and Judging of Live Stock (A. H. 1)		3	
Feeds and Feeding (A. H. 2)			3
General Chemistry (Gen'l Chem. 1)	3	3	
Elementary Pomology (Hort. 1)	3		
Landscape and Floriculture (Hort. 9)		3	
Home Vegetable Gardening (Hort. 5)			3
General Botany (Bot. 1)	3		
Animal Pests (Zool. 1)		3	
Sprays and Spraying (Zool. 2)			2
Farm Drawing (Dr. 1)	1		
Farm Woodwork (Shop 1)	1		
Forging and Pipe-fitting (Shop 2)			1
Composition (Eng. 1-2)	3	3	
Vocational Publications (Eng. 3)			2
R. O. T. C. (M. I. 1)	2	2	2

SECOND YEAR.

Grain Judging (Agron. 3)		1	
Breeds of Animals (A. H. 3)	3		
Animal Diseases (D. M. 1)		3	
Farm Poultry (P. H. 1)			3
Farm Management (F. M. 1)	3		
Farm Accounts (A. E. 1)		2	
Rural Organization (R. O. 1)			3
Dairy Production and Barn Practice (D. H. 2)		3	
Fertilizers (Soils 2)	3		
Plant Diseases (Plt. Path. 1)	3		
Bacteriology (Bact. 1)		2	
Farm Forestry (For. 1)			3
Farm Machinery (F. E. 1)		3	
Farm Buildings		2	
Drainage			3
Elect one or a portion of each:			
Advanced Agronomy (Agron. 4)	3	3	3
Special Animal Husbandry (A. H. 4-6)	3	3	3
Farm Dairying (D. H. 3)	3		
Judging of Dairy Products (D. H. 4)			3
Commercial Fruit Growing (Hort. 2-3)	4	4	
Small Fruits (Hort. 4)			3
Commercial Vegetable Gardening (Hort. 6-8)	3	3	3
Commercial Floriculture (Hort. 10-12)	3	3	3
Gas Engines			3
Beekeeping (Zool. 3)			1

THE SCHOOL OF ENGINEERING

The engineering group includes, in addition to the departments of Civil, Electrical and Mechanical Engineering, the departments of Mathematics and Physics.

Courses leading to the degree of Bachelor of Science are offered in Civil, Electrical, Mechanical and Rural Engineering, respectively. An outline of each is found on the succeeding pages. The four-year courses are arranged with a view to preparing the student for immediate usefulness in the technical world. The fundamental principles are emphasized through lectures, recitations and practical exercises in the laboratory, drafting room, shop and field. The courses allow some latitude in the selection of subjects in the senior year, particularly in Civil Engineering in which an opportunity to specialize in Highway or Sanitary Engineering is afforded, but in the main they are fixed in character, since experience indicates that the faculty is better qualified to select the subjects to be studied than the average undergraduate. The curriculums include studies which provide a broad general culture as well as a good foundation for technical engineering. Emphasis is placed on the necessity for the development of self-reliance, honest and accurate methods of work, and good judgment in addition to the mastering of the scientific laws underlying the profession of engineering and applying them. The general policy of the School is to keep in close touch with and to advance the best interests of the students at all times. To promote this policy some member of the school faculty is assigned to act as the advisor of each student who registers. Students are expected to consult their advisors concerning any subject in which they may be interested, while the advisors keep themselves informed as to the progress and general welfare of the students.

INSTRUCTION

The school is organized, first, to instruct the students who desire to practice engineering as a profession, and, second, to teach students interested in agriculture and applied science, such branches of mechanic arts and engineering as will promote their individual interests. Instruction in certain subjects required under the provisions of the Smith-Hughes Act for the training of teachers in the industrial arts will be given.

The demand for instruction in the mechanic arts and the elementary applications of engineering on the part of those who, for any reason, are unable to enter the four-year courses is met by the establishment of the two-year course in which several options are allowed. This is a practical course for which University credit is not given.

An opportunity is afforded each year for practicing road engineers to take an intensive course in road building and maintenance, and for persons attending the short courses in agriculture to obtain instruction in farm machinery, woodwork, the mixing and placing of concrete, etc.

The work in the departments of Mathematics and Physics is developed with a view both to its cultural and its utilitarian value. The utilitarian point of view is probably more emphasized because scientific training is so largely dependent on these subjects, particularly mathematics. Their value, however, in mental training and in general culture is clearly presented to the students.

SUMMER WORK AND INSPECTION

In addition to the work given during the regular session, summer work covering 100 hours of field, laboratory, shop or office practice is required of members of the freshman class. This work will be developed to include also a specified amount of time at the close of the sophomore and junior years. Summer employment will be accepted as a substitute for this work, if found to be equivalent.

The proximity of the School to Baltimore and Washington and to other places where there are great industrial enterprises offers an excellent opportunity for engineering students to observe what is being done in their chosen field. An instructor accompanies students on all trips of inspection.

Information and advice is given to farmers and others interested concerning drainage, sanitation, water supply, lighting, farm machinery and other small engineering problems whenever possible, although neither an experiment station nor an extension department in engineering has as yet been established.

OUTLINE OF COURSES OFFERED

The normal curriculum of each four-year course is outlined on the following pages. Students are also required to attend and take part in the meetings of the Engineering Society and Seminar or lectures at which problems relating to engineering in its many phases are discussed.

CIVIL ENGINEERING.

FRESHMAN YEAR. Term:	I	II	III
Trigonometry or Solid Geometry (Math. 101 or 102)	5		
Analytics (Math 103)		5	5
Composition and Rhetoric (Eng. 101-103)	3	3	3
Public Speaking (P. S. 101-103)	1	1	1
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
Plane Surveying (Surv. 101-102)		2	1
Freehand Drawing (Dr. 101)	1		
Mechanical Drawing (Dr. 103)	2	1	
Engineering Drawing (Dr. 104)		1	
Descriptive Geometry (Dr. 105)			3
Woodwork (Shop 103)	1		
R. O. T. C. (M. I. 101)	2	2	2

SOPHOMORE YEAR. Term:	I	II	III
Advanced Algebra (Math. 104)	3		
Calculus (Math. 105)	2	5	5
Mechanics and Sound (Phys. 101 and Phys. Lab. 101)	5		
Electricity and Magnetism (Phys. 102 and Phys. Lab. 102)		5	
Light and Heat (Phys. 103 and Phys. Lab. 103)			5
Determinative Mineralogy			2
Plane Surveying (Surv. 103-104)	3		
Advanced Surveying (Surv. 105-106)		4	1
Graphic Statics (Mech. 101)		3	
Analytical Mechanics (Mech. 102)			3
Descriptive Geometry (Dr. 106)	4		
Drafting (Dr. 108)			1
R. O. T. C. (M. I. 102)	2	2	2

JUNIOR YEAR.

Oral Technical English (P. S. 116-118)	1	1	1
Current History (H. 101-103)	1	1	1
Modern Language	3*	3*	3*
Topographic Surveying (Surv. 107)	1		
Railway Curves and Earth Work (Rwys. 101-102)		3	2
Railway Surveying (Rwys. 103)			2
Highways (Hwys. 101)	2		
Mechanics of Engineering (Mech. 103-104)	5	2	2
Materials of Construction (Mech. 105)		2	
Hydraulics (Hyd. 101-102)			4
Shades, Shadows, Perspective (Dr. 109-110)	2	2	
Elementary Structural Design (Str. Des. 101)		3	3
Dynamos and Motors (E. E. 111)	2		
Electrical Engineering Laboratory (El. Lab. 102)	1		
Testing (Exp. Lab. 101)		1	
R. O. T. C. (M. I. 103)	3*	3*	3*

*Alternative.

SENIOR YEAR.‡

Differential Equations (Math. 112)		3†	
Least Squares (Math. 113)			2†
Estimates of Cost (Math. 114)	1		
Astronomy (Math. 115)		3†	
Oral Technical English (P. S. 119-121)	1	1	1
Principles of Economics (Econ. 101-102)	3	3	
Engineering Law (Pol. Sci. 118)			3
Modern Language	3*	3*	3*
Engineering Geology (Geol. 102)			3†
Geodesy (Surv. 108-109)			3†
Railway Economics (Rwys. 104)		3†	
Highway Engineering (Hwys. 102)		3†	4†
Materials Laboratory (Hwys. 103)			1†
Hydromechanics (Hyd. 103)	3		
Elements of Sanitary Engineering (Hyd. 104)	3		
Water Supply (Hyd. 105)		3†	
Sewerage (Hyd. 106)			4†
Hydraulic Design (Hyd. 107)			1†
Structural Design (Str. Des. 102)	3	3	3
Masonry and Concrete (Str. Des. 104)		5	
Heating and Ventilation (M. E. 106)			3†
Cement Testing (Exp. Lab. 103)	1		
R. O. T. C. (M. I. 104)	3*	3*	3*

*Alternative.

†Electives to be selected with the approval of the Dean to supply the necessary credits.

‡Senior Year for Class 1921 as in Catalogue for 1919-20.

ELECTRICAL ENGINEERING.

FRESMAN YEAR. Term:	I	II	III
Trigonometry or Solid Geometry (Math. 101 or 102)	5		
Analytics (Math. 103)		5	5
Composition and Rhetoric (Eng. 101-103)	3	3	3
Public Speaking (P. S. 101-103)	1	1	1
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
Plane Surveying (Surv. 101-102)		2	1
Freehand Drawing (Dr. 101)	1		
Mechanical Drawing (Dr. 103)	2	1	
Descriptive Geometry (Dr. 105)			3
Woodwork (Shop 102)	1	1	
R. O. T. C. (M. I. 101)	2	2	2
SOPHOMORE YEAR.			
Advanced Algebra (Math. 104)	3		
Calculus (Math. 105)	2	5	5
Mechanics and Sound (Phys. 101 and Phys. Lab. 101)	5		
Electricity and Magnetism (Phys. 102 and Phys. Lab. 102)		5	
Heat and Light (Phys. 103 and Phys. Lab. 103)			5
Graphic Statics (Mech. 101)		3	
Analytical Mechanics (Mech. 102)			3
Descriptive Geometry (Dr. 106)	4		
Drafting (Dr. 109)			1
Electricity and Magnetism (E. E. 101)		2	2
Electrical Engineering Laboratory (El. Lab. 101)		1	1
Steam Engines (M. E. 102)	3		
Blacksmithing (Shop 106)		1	
R. O. T. C. (M. I. 102)	2	2	2
JUNIOR YEAR.			
Oral Technical English (P. S. 116-118)	1	1	1
Current History (H. 101-103)	1	1	1
Modern Language	3*	3*	3*
Mechanics of Engineering (Mech. 103)	5		
Hydraulics (Hyd. 101)			3
Direct Current Theory (E. E. 102)	3	3	
Dynamos and Alternating Currents (E. E. 103)			3
Wireless Telegraphy (E. E. 108)		1	
Primary and Secondary Batteries (E. E. 110)		2	
Direct Current Design (E. Des. 101)			5
Electrical Engineering Laboratory (El. Lab. 104)	2	1	2
Wireless Laboratory (El. Lab. 107)		1	
Elementary Machine Design (M. Des. 101)	2		
Machine Design (M. Des. 102)		3	
Machine Work (Shop 111)	1	1	
Testing (Exp. Lab. 101)		1	
R. O. T. C. (M. I. 103)	3*	3*	3*
SENIOR YEAR.†			
Oral Technical English (P. S. 119-121)	1	1	1
Principles of Economics (Econ. 101-102)	3*	3*	
Engineering Law (Pol. Sci. 118)			3
Modern Language	3*	3*	3*
Hydromechanics (Hyd. 103)	3		
Alternating Currents (E. E. 104)	3	3	3
Lighting and Illumination (E. E. 105)			3
Electric Power Plants (E. E. 106)		3	
Telephones and Telegraphs (E. E. 107)		2	
Electric Railways (E. E. 108)			3
Alternating Current Design (E. Des. 102)	1		
Electrical Laboratory (El. Lab. 105)	2	2	2
Telephone Laboratory (El. Lab. 106)		1	
Heat Engineering (M. E. 104)	2		
R. O. T. C. (M. I. 104)	3*	3*	3*

*Alternative.
†Senior Year for Class 1921 as in Catalogue for 1919-20.

MECHANICAL ENGINEERING.

FRESMAN YEAR. Term:	I	II	III
Trigonometry or Solid Geometry (Math. 101 or 102)	5		5
Analytics (Math. 103)		5	
Composition and Rhetoric (Eng. 101-103)	3	3	3
Public Speaking (P. S. 101-103)	1	1	1
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
Freehand Drawing (Dr. 101)		1	
Mechanical Drawing (Dr. 102)	1	1	
Descriptive Geometry (Dr. 105)			3
Technical Instruction (M. E. 101)	1	1	
Woodwork (Shop 101)	1	2	1
R. O. T. C. (M. I. 101)	2	2	2
SOPHOMORE YEAR.			
Advanced Algebra (Math. 104)	3		
Calculus (Math. 105)	2	5	5
Mechanics and Sound (Phys. 101 and Phys. Lab. 101)	5		
Electricity and Magnetism (Phys. 102 and Phys. Lab. 102)		5	
Heat and Light (Phys. 103 and Phys. Lab. 103)			5
Graphic Statics (Mech. 101)		3	
Analytical Mechanics (Mech. 102)			3
Descriptive Geometry (Dr. 106)	4		
Drafting (Dr. 108)			1
Steam Engines (M. E. 102)	3		
Technical Mechanics (M. E. 103)		2	
Blacksmithing (Shop 105)		2	
Foundry (Shop 108)			2
Machine Work (Shop 109)			1
R. O. T. C. (M. I. 102)	2	2	2
JUNIOR YEAR.			
Oral Technical English (P. S. 116-118)	1	1	1
Current History (H. 101-103)	1	1	1
Modern Language	3*	3*	3*
Mechanics of Engineering (Mech. 103-104)	5	2	2
Materials of Construction (Mech. 105)		2	
Hydraulics (Hyd. 101)			3
Dynamos and Motors (E. E. 111-112)	2	2	
Electrical Engineering Laboratory (El. Lab. 102-103)	1	1	
Elementary Machine Design (M. Des. 101)	2		
Machine Design (M. Des. 102-103)		3	4
Kinematics of Machinery (M. Des. 104)			3
Machine Work (Shop 110)	3	2	
Testing (Exp. Lab. 101)		1	
Experimental Engineering (Exp. Lab. 102)			1
R. O. T. C. (M. I. 103)	3*	3*	3*
SENIOR YEAR.‡			
Differential Equations (Math. 107)		3†	
Oral Technical English (P. S. 119-121)	1	1	1
Principles of Economics (Econ. 101-102)	3	3	
Engineering Law (Pol. Sci. 118)			3
Modern Language	3*	3*	3*
Technical Analysis ()			
Hydromechanics (Hyd. 103)	3		
Water Supply (Hyd. 105)		3†	
Structural Design (Str. Des. 103)	4	3	4
Heat Engineering (M. E. 104-105)	2	3	3
Heat and Ventilation (M. E. 106)			3
Marine Engineering (M. E. 107)			2†
Steam Turbines (M. E. 108)			2†
Cement Testing (Exp. Lab. 103)	1		
Experimental Engineering (Exp. Lab. 104)	1	2†	1
R. O. T. C. (M. I. 104)	3*	3*	3*

*Alternative.

†Electives to be selected with the approval of the Dean to supply the necessary credits.

‡Senior Year for Class 1921 as in Catalogue for 1919-20.

RURAL ENGINEERING.

FRESHMAN YEAR. Term:	I	II	III
Trigonometry or Solid Geometry (Math. 101 or 102)	5		
Analytics (Math. 103)		5	5
Composition and Rhetoric (Eng. 101-103)	3	3	3
Public Speaking (P. S. 101-103)	1	1	1
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
Plane Surveying (Surv. 101-102)		2	1
Freehand Drawing (Dr. 101)	1		
Mechanical Drawing (Dr. 103)	2	1	
Engineering Drawing (Dr. 104)		1	
Descriptive Geometry (Dr. 105)			3
Woodwork (Shop 102)	1		
R. O. T. C. (M. I. 101)	2	2	2

SOPHOMORE YEAR.			
Advanced Algebra (Math. 104)	3		
Calculus (Math. 105)	2	5	5
Mechanics and Sound (Phys. 101 and Phys. Lab. 101)	5		
Electricity and Magnetism (Phys. 102 and Phys. Lab. 102)		5	
Heat and Light (Phys. 103 and Phys. Lab. 103)			5
Plane Surveying (Surv. 103-104)	3		
Graphic Statics (Mech. 102)		3	
Analytical Mechanics (Mech. 101)			3
Descriptive Geometry (Dr. 106)	4		
Drafting (Dr. 110)			1
Electricity and Magnetism (E. E. 101)		2	2
Electrical Engineering Laboratory (El. Lab. 101)		1	1
Blacksmithing (Shop 106)		1	
R. O. T. C. (M. I. 102)	2	2	2

JUNIOR YEAR.			
Oral Technical English (P. S. 116-118)	1	1	1
Current History (H. 101-103)	1	1	1
Modern Language	3*	3*	3*
Mechanics of Engineering (Mech. 103)	5		
Hydraulics (Hyd. 101)			3
Elementary Structural Design (Str. Des. 101)		3	3
Lights and Illumination (E. E. 105)			3
Electrical Engineering Laboratory (El. Lab. 102)	1		
Elementary Machine Design (M. Des. 101)	2		
Machine Work (Shop 111)	1	1	
Testing (Exp. Lab. 101)		1	
Electives in Agriculture	4	8	4
R. O. T. C. (M. I. 103)	3*	3*	3*

SENIOR YEAR.‡ Term:	I	II	III
Estimates of Cost (Math. 108)	1		
Oral Technical English (P. S. 119-121)	1	1	1
Principles of Economics (Econ. 101-102)	3	3	
Engineering Law (Pol. Sci. 118)			3
Modern Language	3*	3*	3*
Farm Forestry (For. 101)			3
Engineering Geology (Geol. 102)			3†
Highways (Hwys. 101)	2		
Hydromechanics (Hyd. 103)	3†		
Elements of Sanitary Engineering (Hyd. 104)	3†		
Advanced Drainage (Hyd. 110)			2†
Design of Farm Structures (Str. Des. 105)		3†	3†
School Architecture (Str. Des. 106)			4†
Telephones and Telegraphs (E. E. 107)		2†	
Primary and Secondary Batteries (E. E. 110)		2	
Telephone Laboratory (El. Lab. 106)		1†	
Design of Farm Machinery (M. Des. 105)		3†	3†
Steam Engines (M. E. 102)	3†		
Heating and Ventilation (M. E. 106)			3
Cement Testing (Exp. Lab. 103)	1		
Electives in Agriculture	7†	3†	2†
R. O. T. C. (M. I. 104)	3*	3*	3*

*Alternative.

†Electives to be selected with the approval of the Dean to supply the necessary credits.

‡Senior Year for Class 1921 as in Catalogue for 1919-20.

DESCRIPTION OF SUBJECTS OFFERED

The subjects offered in the different departments of the school are divided into groups, each of which is given a title more or less indicative of the subjects included in it. An abbreviation of this title is placed before each subject in the group. This is used with the subject title in the tabulated outline of the curriculum of each course.

DRAWING AND DESCRIPTIVE GEOMETRY

Dr. 101. Freehand Drawing. One credit hour: one laboratory period. First term.

Elementary practice; letering, exercises in sketching, both in pencil outline and pencil rendering; line drawing, composition; proportion and comparative measurements; exercises in sketching of technical objects. Plates upon completion are bound and properly titled. Required of students in engineering.

Dr. 102. Mechanical Drawing. One credit hour each term: one laboratory period. First and secnod terms.

Practice in plain lettering; use of instruments, projection and simple working drawings, the plates upon completion being enclosed in covers properly titled by the students. Required of students in mechanical engineering.

Dr. 103. Mechanical Drawing. Two credit hours: two laboratory periods. First term. One credit hour: one laboratory period. Second term.

A course similar to Dr. 102 for students in civil, electrical, rural, and chemical engineering.

Dr. 104. Engineering Drawing. One credit hour: one laboratory period. Second term.

Conventional signs used in mapping. Scale making, contours, hachures. Profiles and mapping. Required of students in civil, rural, and chemical engineering.

Dr. 105. Descriptive Geometry. Three credit hours: two lectures and one laboratory period. Third term. Prerequisite, Dr. 102 and Solid Geometry.

Detailing of machinery and drawing to scale from blue-prints. Tracing and blue-printing, and representation of flat and round surfaces by ink shading. Its relatioa to mechanical drawing and the solution of such problems relating to magnitudes in space as bear directly upon those which present themselves to engineers.

Dr. 106. Descriptive Geometry. Four credit hours: two lectures and two laboratory periods. First term.

A continuation of Dr. 105 for all engineers other than chemical.

Dr. 107. Mechanical Drawing. One credit hour: one laboratory period. First term.

Practice in plain lettering, use of instruments, geometrical constructions and plans of simple buildings. Elective for non-engineering students.

Dr. 108. Drafting. One credit hour: one laboratory period. Third term. Prerequisites, Dr. 102 and 103.

In this course problems pertinent to the work of students in each branch of engineering are selected. Drawings are made to scale. Empirical formulas for determining dimensions are used wherever possible.

Dr. 109. Shades, Shadows, Perspective. Two credit hours each term: two laboratory periods. First and second terms. Prerequisite, Dr. 106.

A practical course in the development and application of the theory of shadows and perspective of objects, and of shadows in perspective, supplemented by lectures. Must be taken with Dr. 110. Required of students in civil engineering.

For Short-Course Students

Dr. 1. Farm Drawing. One laboratory period. First term.
A course similar to Dr. 107, for students in the two-year course in Agriculture.

Dr. 2. Mechanical Drawing. Two laboratory periods. First, second and third terms.

Instruction in commercial drafting. This is preceded by a study of drafting instruments and freehand lettering. Projection applied to shop drafting of machine parts. Tracing and blue-printing. The making of detail and assembly drawings. Free hand sketching of machine tools.

Dr. 3. Freehand Drawing. One laboratory period. Third term.
A course similar to Dr. 101.

ELECTRICAL ENGINEERING

E. E. 101. Elementary Electricity. Two credit hours each term: two lectures. Second and third terms.

The elementary theories of electrical and magnetic phenomena are carefully developed, the course being correlated with the technical work taken up later. Required of students in electrical and rural engineering. Must be taken with El. Lab. 104.

E. E. 102. Direct Current Theory. Three credit hours each term: three lectures. First and second terms. Prerequisite, E. E. 101.

The study of the principles involved in the construction and operation of direct and alternating current generators and motors. Also the characteristic curves and efficiencies of the various types of machines, the selections of machines for specific duties and the proper methods of installing and operating. Required of students in electrical engineering. Must be taken with El. Lab. 104.

E. E. 103. Dynamos and Alternating Currents. Three credit hours: three lectures. Third term. Prerequisite, E. E. 102.

This is a continuation of E. E. 102, which covers the characteristics of direct current machinery. A number of analytical and graphical problems are required to give a clear conception of the effects of inductance and capacity in alternating current circuits. Required of students in electrical engineering. Must be taken with El. Lab. 104.

E. E. 104. Alternating Currents and Alternating Current Machinery. Three credit hours each term: three lectures. First, second and third terms. Prerequisite, E. E. 103.

The theory, construction and practical applications of single phase and polyphase alternating current machinery, including generators, synchronous, induction, and repulsion motors, converters, transformers, etc., are taken up in detail. Required of students in electrical engineering. Must be taken with El. Lab. 105.

E. E. 105. Lighting and Illumination. Three credit hours: three lectures. Third term.

A study of the various systems of distribution used in arc and incandescent lighting. Lectures on the manufacture and characteristics of the many forms of electric lamps; the selection of lamps for commercial work, and the principles of correct interior and exterior illumination. Required of students in electrical and rural engineering.

E. E. 106. Electric Power Plants and Transmission. Three credit hours: three lectures. Second term.

This course includes the principles governing the installation and operation of power-house and substation machinery and systems. A number of practical problems are given to illustrate the principles. Required of students in electrical engineering.

E. E. 107. Telephones and Telegraphs. Two credit hours: two lectures. Second term.

The application of electricity to telephones and telegraphs, with a study of the construction and operation of the apparatus required for the magneto, common battery and automatic exchanges. The principles of the operation of simple, duplex, quadruplex and simultaneous telegraps. Required of electrical and elective for rural engineering students. Must be taken with El. Lab. 106.

E. E. 108. Wireless Telegraphy. One credit hour: one lecture. Second term. Prerequisite, E. E. 102.

The principles of the application of electric waves to wireless telegraphy and telephony are followed by a study of the various systems in commercial use. Required of students in electrical engineering. Must be taken with El. Lab. 107.

E. E. 109. Electric Railways. Three credit hours: three lectures. Third term.

The could includes the consideration of the design and operation of the electric railway systems, power plants and sub-stations. Many problems are given which involve the enginering features of modern raiway development. Required of students in electrical engineering.

E. E. 110. Primary and Secondary Batteries. Two credit hours: two lectures. Second term.

A study of the various types of primary batteries and their application to commercial work. The theory, construction and application of

lead storage cells and Edison storage batteries. A short outline of the auxiliary apparatus used in connection with sorage sells. Required of studuents in electrical and rural engineering.

E. E. 111. Dynamo Electric Machinery. Two credit hours: two lectures. First term.

A general course in direct and alternating currents, covering the principles of construction and operation of machines used in commercial practice. Required of civil, mechanical and chemical engineering students. Must be taken with El. Lab. 102.

E. E. 112. Dynamo Electric Machinery. Two credit hours: two lectures. Second term. Prerequisite, E. E. 111.

A continuation of E. E. 111. Required of mechanical and chemical engineering students. Must be take with El. Lab. 103.

For Short-Course Students

E. E. 1. Elements of Direct Current Machinery. Two lectures and one laboratory period. First and second terms.

The study of the fundamental principles involved in the construction and operation of direct current generators and motors. Characteristic curves and the selection of machines for specific purposes. Methods for installing and maintaining various types of geerators and motors. The laboratory practice includes the installation of generators and motors with the necessary auxiliary apparatus, and commercial tests of the various types of direct current machines.

E. E. 2. Elements of Alternating Current Machinery. Four lectures and one laboratory period. Third term. Prerequisite, E. E. 1.

This course includes the study of fundamental principles and the design and construction of alternating current machinery. The laboratory work consists of commercial tests of single phase and polyphase machinery, including generators, motors, converters, transformers, etc.

E. E. 3. Illumination. Two lectures and one laboratory period. Second term.

Lectures on the manufacture and characteristics of the various forms of arc and incandescent lamps; the selection of lamps and reflectors for commercial work; the principles of correct interior and exterior illumination. The laboratory work includes the determination of the operating characteristics, the measuring of the candle-power of lamps, and the measurement of the efficiency of actual lighting installations.

E. E. 4. Electric Power Plants and Transmission. Two lectures. Third term.

The principles governing the installation and operation of power-house and substation machiery, transmission and distribution systems.

E. E. 5. Telephones and Telegraphs. Three lectures and one laboratory period. Third term.

A study of the construction and operation of the apparatus required for magneto, common battery and automatic exchanges. The principles of the operation of simple, duplex and quadruplex telegraphy. The laboratory work includes experiments with the various types of apparatus and the operation of exchanges.

E. E. 6. Primary and Secondary Batteries. Two lectures and one laboratory period. First term.

The study and testing of various types of primary batteries and their application to commercial work. The theory and construction of lead storage cells and Edison storage batteries. Actual tetsing of batteries in operation.

E. E. 7...Electrical Measuring Instruments. Two lectures and one laboratory period. First term.

The theory governing the design, construction and application of all types of direct and alternating current instruments. The repairing, testing and calibration of the different types of instruments.

E. E. 8. Electrical Equipment Repairs. One lecture and one laboratory period. Second term.

This course includes the rewinding of armature and field coils, testing of commutators, repairs for signal systems, etc.

E. E. 9. Interior Wiring. Two lectures and two laboratory periods. First term. One lecture and one laboratory period. Second term.

A thorough study of the Underwriters' Rules concerning all classes of interior wiring. Calculations for circuits and the design of interior light and power systems. The practice includes the installation of residence and commercial light and power systems.

E. E. 10. Outside Line Construction. One lecture and one laboratory period. Third term.

The design and construction of short transmission and distribution systems.

ELECTRICAL ENGINEERING DESIGN

E. Des. 101. Direct Current Dsign. Five credit hours: two lec tures and three laboratory periods. Third term. Prerequisite, E. E. 102.

This course covers the design of direct current generators and motors, including the use of the different conducting, magnetic and insulating materials. Required of students in electrical engineering.

E. Des. 102. Alternating Current Design. One credit hour: one laboratory period. First term. Prerequisite, E. Des. 101.

The complete design of an alternating current generator or a transformer. Required of students in electrical engineering.

ELECTRICAL ENGINEERING LABORATORY

El. Lab. 101. Electrical Engineering Laboratory. One credit hour each term: one laboratory period. Second and third terms.

A laboratory course designed to verify the laws and principles outlined in E. E. 101. Required of students in electrical and rural engineering. Must be taken with E. E. 101.

El. Lab. 102. Electrical Engineering Laboratory. One credit hour: one laboratory period. First term.

This course includes the methods of measuring resistance, current and electromotive force; photometry; and elementary testing of generators and motors. Required of civil, mechanical and chemical engineering students. Must be taken with E. E. 111.

El. Lab. 103. Electrical Engineering Laboratory. One credit hour: one laboratory period. Second term.

A continuation of El. Lab. 102. Required of students in mechanical and chemical engineering. Must be taken with E. E. 112.

El. Lab. 104. Electrical Engineering Laboratory. Two credit hours each term: two laboratory periods. First and third terms. One credit hour: one laboratory period. Second term.

Study and calibration of instruments. Measurements of resistance, current and electromotive force; commercial tests on generators and motors; arc lamp testing and photometry. Required of students in electrical engineering. Must be taken with E. E. 102 and 103.

El. Lab. 105. Electrical Engineering Laboratory. Two credit hours each term: two laboratory periods. First, second and third terms.

Measurement of inductance, impedance, condensance, etc.; power measurements in alternating current circuits; regulation and efficiency tests of alternators and transformers; operating characteristics of synchronous and induction motors. Required of students in electrical engineering. Must be taken with E. E. 104.

El. Lab. 106. Telephone Laboratory. One credit hour: one laboratory period. Second term.

This course covers experimental work with all types of telephone apparatus and the operation of the magneto and common battery exchanges. Required of students in electrical engineering and elective for students in rural engineering. Must be taken with E. E. 107.

El. Lab. 107. Wireless Laboratory. One credit hour: one laboratory period. Second term.

The course includes practice in sending and receiving signals in Continental Code, the design and construction of radio receiving sets, and the operation of long distance receiving apparatus. Required of students in electrical engineering. Must be taken with E. E. 108.

EXPERIMENTAL LABORATORY.

Exp. Lab. 101. Testing. One credit hour: one laboratory period. Second term. Prerequisite, Mech. 103.

Study of testing machines and accessories. Operation of steam engine. Study of planimeter and indicator. Test of gas engines. Tension tests of wrought iron and steel. Transverse tests of cast iron and timber. Compression tests of long and short wood and concrete columns. Required of all engineering students, except chemical.

Exj. Lab. 102. Efflperimental Engineering. One credit hour: one laboratory period. Third term.

Determining the amount of moisture in steam; the efficiency of the injector; the transit and its uses; indicator practice; slide valve setting; the slide rule and micrometer; the analysis of boiler feed water; flue gases; lubricating oils; and the determination of the heating value of fuels and moisture in steam. Required of students in mechanical engineering.

Exp. Lab. 103. Cement Testing. One credit hour: one laboratory period. First term.

Standard tests of cement and concrete mortars. Time of setting. Tension and compression tests. Required of students in civil, mechanical and rural engineering.

Exp. Lab. 104. Experimental Engineering. One credit hour each term: one laboratory period. First and third terms. Two credit hours: two laboratory periods. Second term.

A continuation of Exp. Lab. 102. Required of students in mechanical engineering.

HIGHWAY ENGINEERING

Hwys. 101. Highways. Two credit hours: two lectures. First term.

Principles of location, construction and maintenance of country roads and city streets and pavements. Required of civil and rural engineering students.

Hwys. 102. Highway Engineering. Three credit hours: two lectures and one laboratory period. Second term. Four credit hours: two lectures and two laboratory periods. Third term.

Advanced course in highway design, construction and maintenance. Field work in making the necessary surveys for the preparation of the plans, specifications and estimates of cost for the building of a short stretch of improved road. Study of highway construction machinery. Study of highway economics, administration and legislation. Elective for students in civil engineering.

Hwys. 103. Materials Laboratory. One credit hour: one laboratory period. Third term. Prerequisite, Chem. 102.

Tests of oils, asphalts, tars and road binders. Elective for students in civil engineering.

For Short-Course Students

Hwys. 1. Country Roads. Two lectures and one laboratory period. Third term.

Elementary course in the location, construction and maintenance of country roads and bridges. Theory and field practice in location, establishing grades, drainage, computation of earthwork, methods of construction and road machinery. Study of the utilization of local road and bridge materials.

HYDRAULIC AND SANITARY ENGINEERING

Hyd. 101. Hydraulics. Three credit hours: three lectures. Third term. Prerequisite, Mech. 102.

Principles of Hydraulics. Flow in open channels and pipes and through orifices. Methods of measurement, stream gauging, etc. Required of all students in engineering.

Hyd. 102. Hydraulics. One credit hour: one laboratory period. First term. Prerequisite, Hyd. 101.

Determination of the coefficient of discharge, velocity and contraction in pipes, orifices and weirs. Stream gauging methods. Flow measurements. Required of students in civil and rural engineering.

Hyd. 103. Hydromechanics. Three credit hours: three lectures. First term. Prerequisite, Hyd. 101.

Pumps, pumping machinery, water wheels and turbines. Friction losses in plants and water systems. Study of distribution systems. Required of students in civil, electrical, mechanical and chemical engineering. Elective for rural engineering students.

Hyd. 104. Elements of Sanitary Engineering. Three credit hours: three lectures. First term.

In this course the principles underlying water supply and sewerage are discussed and the general problems which present themselves to an engineer in practice are emphasized. Required of civil engineering and elective for rural engineering students.

Hyd. 105. Water Supply. Three credit hours: two lectures and one laboratory period. Second term.

This course deals with the principles of water supply engineering. It includes the methods of obtaining a good supply, its purification, and the design and operation of distribution systems and filtration plants. Elective for students in civil and mechanical engineering.

Hyd. 106. Sewerage. Four credit hours: two lectures and two laboratory periods. Third term.

This course takes up the principles involved in and the methods of sewage disposal and the design of sewerage systems and septic tanks. House connections and plumbing are also considered. Elective for students in civil engineering.

Hyd. 107. Hydaaulic Design. One credit hour: one laboratory period. Third term.

Design of a small sewerage system and disposal plant. Elective for students in civil and rural engineering. Must be taken with Hyd. 106.

Hyd. 108. Drainage. One credit hour: one lecture. Third term.

Study of the principles of underground flow. Drainage of farm lands. Planning systems. Elective for non-engineering students. Must be taken with Surv. 110.

Hyd. 109. Drainage. One credit hour: one laboratory period. Third term.

Field practice in study of drainage conditions. Planning the system from notes in field. Elective for non-engineering students. Must be taken with Hyd. 108.

Hyd. 110. Advanced Drainage. Two credit hours. one lecture and one laboratory period. Third term.

Elective for rural engineering and non-engineering students.

For Short-Course Students

Hyd. 1. Drainage. Two lectures and two laboratory periods. First term.

Elementary course in farm drainage for students in two-year course in agriculture. Theory and field practice in farm drainage. Surveying, designing and constructing drainage systems for the improvement of agricultural lands.

Hyd. 2. Drainage. Three lectures and two laboratory periods. Third term.

Principles of underground flow and the relation of soils to drainage. Land drainage systems and methods. Field practice in the surveying of drainage areas, plotting of maps, designing systems, estimating costs and setting stakes for construction. Drainage laws and assessments.

Hyd. 3. Water Supply. Two lectures and one laboratory period. First term.

In this course consideration is given to applications of the principles of hydraulics, methods of purifying water, and design of small water supply systems and filtration plants.

Hyd. 4. Sanitation. Two lectures and one laboratory period. Second term.

This course has for its object the consideration of the principles involved in the design of small sewerage systems for individual houses of for small towns, supplemented by discussions relative to house drainage and plumbing. Methods for the disposal of sewage and garbage are also considered.

MACHINE DESIGN

M. Des. 101. Elementary Machine Design. Two credit hours: one lecture and one laboratory period. First term. Prerequitite, Dr. 108.

Freehand sketching of the details of machinery and making working drawings of same. Calculations and drawings of a simple type punching press. Required of students in electrical, mechanical and rural engineering.

M. Des. 102. Machine Design. Three credit hours: two lectures and one laboratory period. Second term.

A continuation of M. Des. 101. Required of students in electrical and mechanical engineering.

M. Des. 103. Machine Design. Four credit hours: two lectures and two laboratory periods. Third term.

A continuation of M. Des. 102. Required of students in mechanical engineering.

M. Des. 104. Kinematics of Machinery. Three credit hours: two lectures and one laboratory period. Third term. Prerequisites, M. Des. 101.

Centrodes. Determination of the instantaneous axis and instantaneous center. Preparation of displacement, velocity and acceleration diagrams. Design of cams. Slow advance and quick return motion for machine tools. Form of tooth outlines in the epicycloidal and involute eystems. Reuired of students in mechanical engineering.

M. Des. 105. Design of Farm Machinery. Three credit hours each term: two lectures and one laboratory period. Second and third terms. Prerequisite M. Des. 101.

For Short-Course Students

The design and drafting of those portions of farm machinery common to engines, and to harvesting, pumping and fertilizing machinery, such as levers levers, shafts, gears and frames. Elective for students in rural engineering.

M. Des. 1. Machine Drafting and Design. Two laboratory periods each term. First, second and third terms.

The designing and detailing of a complete machine, including the determination of the stresses and the calculations for the various parts. Both empirical and rational methods are used.

MATHEMATICS

Math. 101. Trigonometry. Five credit hours: five lectures. First term.

Plane and Spherical Trigonometry. Deduction of formulas and their application to the solution of triangles, trigonometric equations, etc. Required of students in engineering who have offered Soldid Geometry for entrance.

Math. 102. Solid Geometry and Spherical Trigonometry. Five credit hours: five lectures. First term.

In this course emphasis is placed on the relation of the subject to descriptive geometry and on areas and volumes of solids. The latter portion of the time is devoted to spherical trigonometry. Required of engineering students who have offered plane trigonometry for entrance. Elective for other students.

Math. 103. Analytic Geometry. Five credit hours each term: five lectures. Second and third terms. Prerequisites, Math. 101 and 102.

Geometry of two and three dimensions, loci of general equations of second degree, higher plane curves, etc. Required of students in engineering.

Math. 104. Advanced Algebra. Three credit hours: three lectures. First term.

Algebra beyond that required for admission. Elementary theory of equations, partial fractions, permutations, etc. Required of engineering students.

Math. 105. Calculus. Twe credit hours: two lectures. First term. Five credit hours each term: five lectures. Second and third terms. Prerequisite, Math. 103.

A discussion of the methods used in differentiation and integration and the application of these methods in determining maxima and minima, areas, volumes, moments of inertia, etc. Required of engineering students.

Math. 106. Algebra. Three credit hours: three lectures. First term.

Quadratic Equations, simultaneous quadratic equations, progressions, graphs, logarithms, etc. Required of students in chemistry.

Math. 107. Plane Trigonometry. Three credit hours: three lectures. Second term.

Trigonometric functions. Development of formulas and their application to the solution of trigonometric equations and of right and oblique triangles. Required o fstudents in chemistry.

Math. 108. Plane Analytic Geometry. Three credit hours: three lectures. Third term. Prerequisites, Math. 106 and 107.

A discussion of the straight line, conic sections and higher plane curves. Required of students in chemistry.

Math. 109. Plane Analytic Geometry. Three credit hours: three lectures. First term.

A continuation of Math. 108. Required of students in chemistry.

Math. 110. Calculus. Three credit hours each term: three lectures. Second and third terms. Prerequisite, Math. 109.

A general course in differential and integral calculus particularly adapted to the needs of students in chemistry.

Math. 111. Solid Geometry. Three credit hours: three lectures. Third term.

A course in geometry similar to Math. 102. Elective.

Math. 112. Differential Equations. Three credit hours: three lectures. Second term. Prerequisite, Math. 105.

The solution of the simpler differential equations is discussed. Elective for students in civil and mechanical engineering.

Math. 113. Least Squares. Two credit hours: two lectures. Third term.

A short course in which stress is laid on the application to geodesy. Elective.

Math. 114. Estimates and Costs. One credit hour: one laboratory period. First term.

Methods of estimating costs, supplemented by problems of a practical nature. Required of students in civil and rural engineering.

Math. 115. Astronomy. Three credit hours: three lectures. Second term.

A course in descriptive astronomy. Elective.

For Short-Course Students

Math. 1. Shop Mathematics. One lecture. First, second and third terms.

Applications of arithmetic, algebra, geometry and trigonometry to the solution of practical shop problems.

Math. 2. Algebra. Three lectures. First and second terms.

Algebra from the beginning to quadratic equations.

Math. 3. Plane Geometry. Three lectures. Third term.

A thorough first course in plane geometry, using a standard text.

Math. 4. Plane Geometry. Three lectures. First term.

A continuation of Math. 3.

Math. 5. Shop Mathematics. One lecture. First and second terms.

A continuation of Math. 1.

Math .6. Plane Trigonoemtry. Three lectures. Second term.

Trigonometric functions. Development of formulas. Logarithms. Solution of triangles.

Math. 7. Applied Mathematics. Three lectures. Third term.

The application of mathematics previously taught to the solution of shop problems.

MECHANICAL ENGINEERING

M. E. 101. Technical Instruction. One credit hour each term: one lecture. First and second terms.

Explanation of the reading of mechanical drawings; the proper cutting angles, care and adjustment of carpenter tools; relative strength of wood joints; wood, its shrinking and warping, and how to correct and prevent. Drill in problems in arithmetic, algebra and drawing supplemented by notes and lectures. Required of students in mechanical engineering.

M. E. 102. Steam Engines, Boilers and Dynamos. Three credit hours: three lectures. First term.

The principles of steam and the steam engine. The slide valve and valve diagrams. The indicator and its diagram. Steam boilers, the various types and their advantages. Each student taking this course is required to spend certain hours in the power plant actually operating

the engine, boilers and dynamos. Required of students in electrical and mechanical engineering. Elective for rural engineering students.

M. E. 103. Technical Mechanics. Two credit hours: two lectures. Second term.

Elementary principles of applied mechanics, calculation of gear and pulley trains, bent levers, calculation of belt lengths, lacing belts, the suction pump, and bolts and screws. Required of students in mechanical engineering.

M. E. 104. Heat Engineering. Two credit hours: two lectures. First term. Prerequisite, M. E. 102.

Laws underlying the fundamental equations. Perfect gases. Compound, hot-air and gasoline engines. Theory of vapors. Relation between pressure, volume, temperature, work and heat for special changes of state. Calculation and drawing of Carnot's cycle and temperature entropy diagram. The steam turbine. Compressed air and refrigeration machinery. Required of students in electrical and mechanical engineering.

M. E. 105. Heat Engineering. Three credit hours each term: three lectures. Second and third terms.

A continuation of M. E. 104. Required of mechanical engineering students.

M. E. 106. Heating and Ventilation. Three credit hours: two lectures and one laboratory period. Third term. Prerequisite, Dr. 108.

The principles of ventilating; amount of heat required for warming; radiating surfaces; steam, hot-water and hot-air systems; vacuum and vapor systems; pipe and pipe systems; appliances; specifications and contracts. Required of mechanical and rural and elective for civil engineering students.

M. E. 107. Marine Engineering. Two credit hours: two laboratory periods. Third term.

This is a preliminary course in marine engineering aranged for those desiring to specialize in marine engineering and deals with the theory of compound and triple expansion engines and the design of the principal parts of these types and of the marine boiler. Elective for students in mechanical engineering.

M. E. 108. Steam Turbine Engineering. Two credit hours: two laboratory periods. Third term.

This is a preliminary course arranged for those desiring to specialize in turbine engineering and deals with the theory of the various types of turbines and the design of the essential parts. Elective for students in mechanical engineering.

M. E. 109. Gas Engines. Four credit hours: three lectures and one laboratory period. Third term.

The fundamental princlples concerning the gas engine. Its applications to agricultural operations. Elective for students in the four-year agricultural courses.

For Short-Course Students

M. E. 1. Gas Engines. Two lectures and one laboratory period. Third term.

A course similar to M. E. 109, for students in the two-year course in agriculture. Elective.

M. E. 2. Technical Instruction. Two lectures. First, second and third terms.

Explanation of the reading of mechanical drawings; the proper angles for wood-cutting tools, care and adjustment of carpenter tools; relative strength of wood joints; wood, its shrinking and warping, and how to prevent and correct. Freehand sketching of tools and apparatus.

M. E. 3. Heat Engines. Four lectures. First term.

Elementary laws of steam and gases. Principles of the steam, gas and oil engine. The steam turbine. Compressed air and refrigeration machinery.

M. E. 4. Technical Mechanics. Four lectures. First, second and third terms.

Mechanics of materials with applications to strength of machine parts, power transmission, belting, gears, cams, rope and chain drives, boilers and pumps.

M. E. 5. Power Plant Operation. One laboratory period. First term.

The actual operation of boilers, engines, pumps and electric generators. This includes heating systems. The work will be done on Friday nights.

MECHANICS AND MATERIALS OF CONSTRUCTION

Mech. 101. Graphic Statics. Three credit hours: two lectures and one laboratory period. Second term. Prerequisites, Phys. 101 and Dr. 102 or 103.

The theory and practice of the methods of determining stresses in cranes, roof trusses and bridges, and stresses on beams and girders due to traveling loads. Analysis of the stresses in roof trusses by the force polygon. Application of the equilibrium polygon to beams and girders. Analysis of stresses in bridge trusses. Required of all engineering students, except chemical.

Mech. 102. Analytical Mechanics. Three credit hours: two lectures and one laboratory period. Third term. Prerequisites, Phys. 101 and Math. 105.

A study of statics dealing with the composition and resolutions of forces, moments, couples, machines and laws of friction; and of dynamics, dealing with velocity, acceleration, laws of motion, work, energy and applications to problems. Required of engineering students.

Mech. 103. Mechanics of Engineering. Five credit hours: five lectures. First term. Prerequisite, Mech. 102.

The mechanics of solids. Statics of material point and of rigid bodies. Chains and cords. Centrifugal and centripetal forces. Work. Power. Energy. Sliding friction, friction of journals, friction of pivots, friction of ropes and belts. Analysis of stresses in thick cylinders. Required of all students in engineering, except chemical.

Mech. 104. Mechanics of Engineering. Two credit hours each term: two lectures. Second and third terms.

A continuation of Mech. 103. Required of students in civil and mechanical engineering.

Mech. 105. Materials of Construction. Two credit hours: two lectures. Second term. Prerequisite, Mech. 103.

A study of the manufacture, composition and properties of the various materials used in engineering. Required of students in civil and mechanical engineering.

For Short-Course Students

Mech. 1. Concrete. Two lectures and one laboratory period. First term.

Consideration is given in this course to the materials used in making concrete, the properties of concrete, both plain and reinforced, and its use in the construction of simple structures. The practical work includes the mixing and placing of concrete and the application of formulas to the design of beams, girders, etc.

PHYSICS

Phys. 101. Mechanics and Sound. Four credit hours: four lectures. First term. Prerequisite, Math. 101.

Lectures, recitations and domonstrations on mechanics and sound. Required of students in engineering and chemistry. Must be taken with Phys. Lab. 101.

Phys. 102. Electricity and Magnetism. Four credit hours: four lectures. Second term.

The elementary theory of electricity and magnetism and the practica application of the various laws. Required of students in engineerin and chemistry. Must be taken with Phys. 102.

Phys. 103. Heat and Light. Four credit hours: four lectures. Thir term.

Nature of heat, expansion, change of state, transmission and radiatio of heat, and the elements of thermodynamics. Theory of light, refle tion, refraction, dispersion, etc.; use of prisms, lenses and mirrors. R quired of students in engineering and chemistry. Must be taken wit Phys. Lab. 103.

Phys. 104. General Physics. Two credit hours each term: two le tures. First, second and third terms.

A discussion of such branches of physics as are suited to the needs c students in the non-technical courses. Elective. Must be taken wit Phys. Lab. 104.

For Short-Course Students

Phys. 1. Elementary Physics. Three lectures. First, second an third terms.

An elementary course including lectures and recitations in mechanic heat, light, electricity and magnetism. Special attention is paid to pra tical applications.

PHYSICAL LABORATORY

Phys. Lab. 101. Mechanics and Sound. One credit hour: one la oratory period. First term.

Quantitative experiments illustrating the laws and principles studi under Phys. 101. Required of students in engineering and chemistr Must be taken with Phys. 101.

Phys. Lab. 102. Electricity and Magnetism. One credit hour: o laboratory period. Second term.

The study of magnetic fields and the measurement of current, electr motive force, resistance, etc. Required of students in engineering a chemistry. Must be taken with Phys. 102.

Phys. Lab. 103. Heat and Light. One credit hour: one laborato period. Third term.

Quantitative experiments in heat and light. Required of students engineering and chemistry. Must be taken with Phys. 103.

Phys. Lab. 104. General Physics. One credit hour each term: o laboratory period. First, second and third terms.

Experiments illustrating the subjects discussed in Phys. 104. El tive for students in the non-technical courses. Must be taken wi Phys. 104.

For Short-Course Students

Phys. Lab. 1. Elementary Physics. One laboratory period. First, second and third terms.

An elementary course including experiments selected to illustrate the principles discussed under Phys. 1. Must be taken with Phys. 1.

RAILWAY ENGINEERING

Rwys. 101. Railway Curves. Three credit hours: two lectures and one laboratory period. Second term. Prerequisite, Surv. 105.

Simple and compound curves, frogs, turnouts and crossings. Spirals. Required of students in civil engineering.

Rwys. 102. Railway Earthwork. Two credit hours: two lectures. Third term. Prerequisite, Rwys. 101.

Cross-sectioning. Earthwork computations. Haul. Overhaul. Mass diagrams. Required of students in civil engineering.

Rwys. 103. Railway Surveying. Two credit hours: two laboratory periods. Third term. Prerequisite, Rwys. 101.

Preliminary surveys, location surveys, taking of cross-sections. Computation of quantities. Estimates. Must be taken with Rwys. 102. Required of students in civil engineering.

Rwys. 104. Railway Economics. Three credit hours: three lectures. Second term. Prerequisite, Rwys. 101.

Ballasting, track fastenings, rails, buildings and structures, terminals, signaling, rolling stock. Promotion, operating expenses, effects of curvature nad grade. Valuation, repairs and renewals. Elective for students in civil engineering.

SHOP PRACTICE

Shop 101. Woodwork. One credit hour each term: one laboratory period. First and third terms. Two credit hours: two laboratory periods. Second term.

During the first term is taught the use and care of bench tools, exercise in sawing, mortising, tenoning and laying out work from blueprints. The second term is devoted to projects involving construction, decoration and wood-turning. During the third term the principles and processes of pattern-making are taught, together with enough foundry work to demonstrate the uses of pattern-making. Required of students in mechanical engineering.

Shop 102. Woodwork. One credit hour each term: one laboratory period. First and second terms.

A course similar to the first and second terms of Shop 101 for students in electrical engineering.

Shop 103. Woodwork. One credit hour: one laboratory perid. First term.

A short course similar to the first term of Shop 101 for students in civil and rural engineering.

Shop 104. Woodwork. One credit hour: one laboratory period. Second term.

A course for students in agricultural courses, in which emphasis is laid on the types of woodwork used on the farm. Elective.

Shop 105. Blacksmithing. Two credit hours: two laboratory periods. Second term. Prerequisite, Shop 101.

The making of the fire and how to keep it in order. The operations of drawing out, upsetting and bending of iron and steel, including the calculations of stock for bent shapes. Welding. Construction of steel tools for use in the machine shop, including tool dressing and tempering. Annealing.

Shop 106. Blacksmithing. One credit hour: one laboratory period. Second term.

A course similar to Shop 105, for students in electrical and rural engineering.

Shop 107. Forging and Pipefitting. One credit hour: one laboratory period. Third term.

A course fitted to meet the needs of students in the four-year courses in agriculture. Elective.

Shop 108. Foundry Work. Two credit hours: two laboratory periods. Third term. Prerequisite, Shop 105.

Molding in iron and brass. Coremaking. The cupola and its management. Lectures on the selection of irons by fracture, fuels, melting and mixing of metals. Required of students in mechanical engineering.

Shop 109. Machine Work. One credit hour: one laboratory period. Third term.

Elementary principles of vise and machine work, which include turning, planing, drilling, screw-cutting and filing. This is preceded by study of the different machines used in machine shops. Required of students in mechanical engineering.

Shop 110. Machine Shop. Three credit hours: three laboratory periods.

A continuation of Shop 109. Required of students in mechanical engineering.

Shop 111. Machine Work. One credit our each term: one laboratory period. First and second terms.

A course suited to the needs of students in electrical and rural engineering.

For Short-Course Students

Shop 1. Farm Woodwork. One laboratory period. Second term.

Use of tools in constructing trestles, gates and frames. Required of students in the two-year course in agriculture.

Shop 2. Forging and Pipefitting. One laboratory period. Third term.

Similar to Shop 107, for students in the two-year course in agriculture.

Shop 3. Carpentry and Pattern-Making. Two laboratory periods. First term.

Joinery. Pattern and core-box construction. Wood turning.

Shop 4. Advanced Woodwork. One laboratory period. Third term.

In this course the special needs of the student are considered in laying out the work.

Shop 5. Blacksmithing. Two laboratory periods. Second term.

The making of the fire and how to keep it in order. The operations of drawing out, upsetting and bending iron and steel, including the calculations of stock for bent shapes. Welding. Making, tempering and annealing of steel tools.

Shop 6. Foundry. Two laboratory periods. Third term.

Molding in iron and brass. Core-making. The cupola and its management. Lectures on the selection of irons by fracture, fuels, melting and mixing of metals.

Shop 7. Machine Work. Two laboratory periods. First term.

Elementary principles of vise and machine work, which includes chipping, filing, turning, planing, drilling, screw-cutting and polishing. The study of the different machines precedes the operations.

Shop 8. Advanced Machine Work. Two laboratory periods. Second term.

Milling, gear-cutting, toolmaking, including taps, dies and reamers. Plain and differential indexing. Pipe-cutting and fitting.

Shop 9. Shop work. Three laboratory periods. Third term.

Students will be permitted to specialize in any of the shop courses. The work is of an advanced nature.

Shop 10. Machine Work. One laboratory perid. Third term.

A course similar to Shop 7, for students in electricity.

STRUCTURAL DESIGN

Str. Des. 101. Elementary Structural Design. Three credit hours each term: two lectures and one laboratory period. Second and third terms. Prerequisite, Mech. 103.

This course includes the complete design and detailing of a steel roof truss and a plate girder; the detailing from standard commercial drawing sheets of floor beams, girders and columns, and the complete design of a bridge truss of either the Waren or Pratt type. The stresses are determined by analytical and graphical methods. Required of students in civil and rural engineering.

Str. Des. 102. Structural Design. Three credit hours each term: two lectures and one laboratory period. First, second and third terms. Prerequisite, Str. Des. 101.

Analysis of stresses in structural steel buildings. Design of roof trusses. Design of truss bridges and highway bridges. Design of plate girders under dead and live loads. Design of riveted connections. Both analytical and graphical methods are used. Required of students in civil engineering.

Str. Des. 103. Structural Design. Four credit hours each term. two lectures and two laboratory periods. First and third terms. Three credit hours: two lectures and one laboratory period. Second term. Prerequisite, M. Des. 102.

Analysis of stresses in traveling cranes and derricks. Design of crane girders and lattice girders. Design of cranes. Both analytical and graphical methods are used. Design of riveted connections. Required of students in mechanical engineering.

Str. Des. 104. Masonry and Concrete. Five credit hours: four lectures and one laboratory period. Second term.

A study of the materials used in masonry construction, the design and construction of foundations and retaining walls, and the elementary theory of reinforced concrete construction with its application in the design of beams, slabs, girders and columns. Required of students in civil engineering.

Str. Des. 105. Design of Farm Structures. Three credit hours each term: two lectures and one laboratory period. Second and third terms. Prerequisite, Str. Des. 101.

The design and arrangement of farm buildings and equipment. Lectures also cover the heating, lighting, ventilation and plumbing, together with their cost. Elective for students in rural engineering.

Str. Des. 106. School Architecture. Four credit hours: three lectures and one laboratory period. Third term. Prerequisite, Str. Des. 101.

The planning and detailing of moderate-priced and medium-sized school buildings, including the heating, ventilation, lighting and plumbing. Elective for students in rural engineering.

Str. Des. 107. Farm Buildings. Two credit hours: one lecture and one laboratory period. First term. Prerequisite, Dr. 107.

Design and specifications of a simple typical building in timber or concrete and lectures upon the details. The course is very practical and latitude is permitted the student to develop his ideas. Elective for non-engineering students.

For Short-Course Students

Str. Des. 1. Farm Buildings. One lecture and one laboratory period. First term. Prerequisite, Dr. 1.

An elementary course similar to Str. Des. 107. Required of students in the two-year course in agriculture and in engineering (surveying option).

Str. Des. 2. Concrete Structures. One lecture and one laboratory period. Second term. Prerequisite, Str. Des. 1.

Design of simple concrete houses, bridges and culverts. Estimate of bills of material and cost. Required of students in the two-year course in engineering (surveying option).

SURVEYING

Surv. 101. Surveying. Two credit hours: two lectures. Second term. Prerequisite, Math. 101.

Elements of surveying. Measurement of horizontal and level lines. Errors, use of compass, transit and level. Required of students in civil, electrical, rural and chemical engineering.

Surv. 102. Surveying. One credit hour: one laboratory period. Third term. Prerequisite, Surv. 101.

Application of the principles of elementary surveying to practical operations in the field. Measurement of lines, angles, elevations. Introductory use of the transit and level. Required of students in civil, electrical, rural and chemical engineering.

Surv. 103. Surveying. Two credit hours: two lectures. First term. Prerequisite, Surv. 102.

Theory of adjustment of instruments. Determination of direction. Measurement of angles. Land survey methods and computations. Required of students in civil and rural engineering. Must be taken with Surv. 104.

Surv. 104. Surveying. One credit hour: one laboratory period. First term.

Transit lines, level lines, traversing, mapping, computation of areas. Required of students in civil and rural engineering. Must be taken with Surv. 103.

Surv. 105. Advanced Surveying. Four credit hours: three lectures and one laboratory period. Second term. Prerequisite, Surv. 103.

Theory of stadia. General surveying methods. Topographic surveying. Plane table. Earthwork computations. City surveying. Hydrographic surveying. Theory of sextant. Field practice when weather permits. Required of students in civil engineering.

Surv. 106. Advanced Surveying. One credit hour: one laboratory period. Third term. Prerequisite, Surv. 105.

Field work in adjustment of instruments. Use of plane table. Topographic mapping. Use of sextant. Solar observations. Required of students in civil engineering.

Surv. 107. Topographic Surveying. One credit hour: one laboratory period. First term. Prerequisite, Surv. 106.

Field work in topographic methods. Base-line measurements. Elements of triangulation and adjustment of quadrilaterals. Required of students in civil engineering.

Surv. 108. Geodesy. Two credit hours: two lectures. Third term. Prerequisite, Surv. 105.

Applications of the method of least squares to precise surveying, leveling, and triangulation. Astronomical observations for azimuth, latitude, longitude and time. Elective for students in civil engineering.

Surv. 109. Geodesy. One credit hour: one laboratory period. Third term.

Practice in problems developed in Surv. 108. Elective for students in civil engineering.

Surv. 110. Elementary Surveying. One credit hour: one lecture. Third term. Prerequisite, Math. 107.

Measurement of lines, angles and elevations. Elementary use of transit and level. Elective for non-engineering students. Must be taken with Hyd. 108.

Surv. 111. Elementary Surveying. One credit hour: one laboratory period. Third term.

Application of principles of plane surveying to practical operations in the field. Profiles and traverses, computations of areas. Elective for non-engineering students. Must be taken with Surv. 110.

For Short-Course Students

Surv. 1. Elementary Surveying. Three lectures and two laboratory periods. First term.

Theory and practice of elementary surveying. Use and care of chain, tape, compass, transit and level. Determination of direction and of elevation. Keeping of field notes. Land survey methods, computations and mapping.

Surv. 2. Elementary Surveying. Two lectures and one laboratory period. Second term.

Continuation of Surv. 1.

FACILITIES FOR INSTRUCTION

The Engineering Building is well equipped with lecture-rooms, recitation-rooms, drafting-rooms, laboratories and shops for engineering work. The departments of Mathematics and Physics are located in the Engineering Building.

Drafting-rooms. The three drafting-rooms are well equipped for practical work. Two of these are used by the junior and senior classes, each student being provided with a separate desk. The third room is used jointly by the freshman and sophomore students and contains 15 drawing tables, accommodating about 90 students.

Engineering students must provide themselves with approved drawing outfit, materials and book, cost of which during the freshman year amounts to about $25.

The combined blue-print and dark room ,with its commodious printing frames, affords splendid opportunities for sun-printing, which is so useful to engineering students.

Electrical Engineering Laboratory. This laboratory is fitted with such appliances as may be used to the best advantage in engineering practice. These include a potentiometer and standard voltmeter and ammeter for calibrating the various measuring instruments used in the laboratory. A Sharp-Miller portable photometer and a standard photometer for measuring the candle-power of lamps and for determination of illumination intensities. A large number of portable ammeters, voltmeters and indicating wattmeters for direct and alternating current measurements, standard curve drawing voltmeter and ammeter, electrostatic voltmeter, frequency meters, silver and copper voltameters, Siemen's type electrodynamometer, watthourmeters and an oscillograph. A standard portable testing set, heating devices, condensers, tachometers, multiple circuit ammeter and voltmeter switches. D'Arsonval galvanometers, standard resistance boxes and bridges. The lamps used for experimental purposes include direct and alternating current multiple carbon arc, metallic arc, mercury vapor and nernst lamps.

A Curtis steam turbine, direct connected to a 35-kilowatt compound generator, has been installed for testing purposes. This may be used in connection with the University lighting plant when needed and will be used for light and power service in the Engineering Building.

The laboratory is so wired that connection may be made readily between any part of the University lighting plant and the turbo-generator or any of the apparatus in the dyamo-room.

The apparatus in the dynamo-room includes the following: A 10-kilowatt rotary converter of the latest type, with speed limit and end play devices; a five-horse-power variable speed, commutating pole motor; a 7.5-kilowatt, 60-cycle, 220-volt alternator designed to operate either as a polyphase generator, synchronous motor, frequency changer, constant speed induction motor or variable speed induction motor. The following parts are supplied with the set to make possible its operation in any of the above-named ways: a stationary armature for use either as an alternating current generator or as an induction motor field; a revolving field, a squirrel cage induction motor rotor with starting compensator having self-contained switches; an induction motor rotor with 3-phase collector rings, external resistance and controller; a 2-kilowatt booster set; a five-horse-power compound direct current motor and a 1.5-horse-power shunt motor fully inclosed; a 7.5-kilowatt, 120-volt, 3-phase self-excited generator direct connected to a 115-volt compound direct current motor; a motor-generator set consisting of a 3.6-horse-power shunt motor direct connected to a 2-kilowatt generator; several small D. C. and A. C. motors and generators; two 2-kilowatt transformers to transform power from 110 or 220 volts to 1100 or 2200 volts; various types of starting rheostats with automatic overload and no voltage release; field rheostats.

The main switchboards are used to mount the necessary circuit apparatus to control the generators and motors as well as the various circuits in the dynamo-room and testing laboratory. Wire and water rheostats are arranged for load and regulation. Portable lampboards and portable switchboards have been constructed for use in machine tests. In addition to the special electrical engineering equipment, the College lighting plant will be used for illustrative and experimental purposes. This plant contains, together with other apparatus useful in teaching electrical engineering, two Bullock generators of 40 kilowatts total capacity.

An eight-inch Waltham bench lathe, with all the necessary attachments, has been installed in the dyamo-room for the use of students in making small articles, such as binding posts, connecters, etc., for use in the laboratories.

The telephone laboratory is well equipped with apparatus for the magneto and common battery systems.

Mechanical Engineering Laboratory. Among the apparatus installed in the laboratory are a cross compound condensing Corliss engine of 50

horse-power, equipped with brake, indicators, relief valves, reducing motion, steam and vacuum gauges and speed indicator, which gives ample opportunity for steam consumption and brake tests. This is connected with the shops, so that at any time it may be switched on and drive them. The University power plant, with its vacuum heating system, three 100-horse-power return tubular boilers and two electric generating units, offers opportunities for experimental work. An eight-horse-power, four-cycle gasoline engine equipped with prony brake permits the making of tests in gas engineering.

Materials Laboratory. In this laboratory the apparatus for testing materials includes a 100,000-pound Riehle combined hand and power-testing machine for making tensile, compression, shearing and transverse tests on various kinds of materials; a 1,000-pound Riehle machine for testing cement briquettes, etc. The testing of asphalts, tars, etc., used in roadwork is carried on under the direction of the Department of Chemistry.

Hydraulic Laboratory. Apparatus suitable for the determination of the coefficient of discharge for small orifices, weirs, etc., has been installed in this laboratory. Opportunity for experimental work in stream gauging, etc., is afforded by the streams in the vicinity.

Physics Laboratory. This laboratory is well supplied with apparatus for lecture-room demonstrations and for experiments undertaken by students. New pieces of apparatus are added to the equipment each year.

The Shops. The shops are well lighted and admirably adapted to the purpose for which they were designed. The wood-working shop contains accommodations for bench work and wood turning. The power machinery in this shop is a band and universal circular saw, one 16-inch by 10-foot pattern-maker's lathe, three grindstones, a wood trimmer, 26-inch wood planer, 14-inch joiner and universal tool grinder.

In the forge shops are sixteen power forges, one hand forge, a power emery grinder, and a pressure fan and exhauster for keeping the shop free of smoke. There is a full assortment of smith's tools for each forge.

The foundry is equipped with an iron supola, which melts 1,200 pounds or iron per hour, a brass furnace, one core oven and the necessary flasks and tools.

The machine shop equipment consists of one 10-inch speed lathe, one 22-inch engine lathe with compound rest, one 12-inch combined foot and power lathe, two 14-inch engine lathes, one 25-inch drill press, one No. 4 emery tool grinder, one No. 1½ universal milling machine and an assortment of vises, taps, dies, pipe-tools and measuring instruments.

The machinery of the pattern and machine shops is driven by a 9 by 14-inch automatic cut-off, high-speed engine, built by members of the

junior and senior mechanical engineering classes, after the standard de sign of the Atlas engine. An 8 by 12-inch engine drives the machinery of the blacksmith shop and foundry.

Surveying Equipment and Models. This equipment includes a num ber of transits, levels, compasses, plane tables and minor instruments for use in plane, topographic, railroad, highway and geodetic surveying These are added to as the necessity for other equipment arises. The models include various types of roads, bridges, culverts, etc.

Library. Each department contains a well selected library of books for reference and the standard engineering magazines. Students are encouraged to take advantage of the opportunity for reading afforded in the departmental as well as in the general library.

TWO-YEAR COURSE IN MECHANIC ARTS

The object of the course is to prepare men for positions of responsi bility in lines of work in which training in mechanic arts and elementary engineering is necessary. There is a special need for such men at al times and particularly during the reconstruction period. The course affords an excellent opportunity for training to such persons as find i impossible for any reason to enter ony of the four-year courses in engi neering. A certificate is granted to each student who satisfactorily completes the course. The first year of the course is devoted to the laying of a moundation in mathematics, physics and English, as wel as in drawing and shop work. In the second year most of the time i devoted to subjects closely related to mechanical, electrical and civil en gineering, the student selecting the branch in which he thinks he may use his tlents to the greatest advantage.

Throughout the course emphasis is laid on the necessity for turning out work in the drafting-room, shop and field which will meet the re quirements of the commercial work. The student is taught that a task worth doing at all is worth doing well and that the finished product from the hand, brains, or both, must not only pass inspection, but be better than the average if one wishes to succeed. Parallel with the practica work instruction is given in the fundamentals upon which parctice i based. Thus the head and hand are brought into that intimate and har monious relation so necessary to the normal development of the individua engaged in any industrial pursuit.

Among the positions which the course equips a man to fill may b noted the following: Tracers, draftsmen, rodmen, inspectors, chainmen linemen, station operators, assistats in various branches related to en gineering, salesmen for different kinds of machinery, and assistan foremen.

To enter the course a student must have completed at least the equivalent of the seventh grade in the Maryland public schools and be not less than 16 years of age.

The tabulated curriculum of the course follows. It gives the outline of the work in its different aspects:

TWO-YEAR MECHANIC ARTS.

FIRST YEAR. Term:	I	II	III
hop Mathematics (Math. 1)	1	1	1
lgebra (Math. 2)	3	3	
lane Geometry (Math. 3)			3
lementary Physics (Phys. 1)	3(3)	3(3)	3(3)
omposition (Eng. 4)	3	3	3
echnical Instruction (M. E. 2)	2	2	2
echanical Drawing (Dr. 2)	(6)	(6)	(6)*
reehand Drawing (Dr. 3)			(3)
arpentry (Shop 3)	(6)		
dvanced Woodwork (Shop 4)			(3)
lacksmithing (Shop 5)		(6)	
oundry (Shop 6)			(6)*
. O. T. C. (M. I. 101)	1(2)	1(2)	1(2)
SECOND YEAR.			
lane Geometry (Math. 4)	3		
hop Mathematics (Math. 5)	1	1	
lane Trigonometry (Math. 6)		3	
pplied Mathematics (Math. 7)			3
usiness Law (————)		3	
. O. T. C. (M. I. 102)	1(2)	1(2)	1(2)
OPTION IN MECHANICS.			
eat Engines (M. E. 3)	4		
echnical Mechanics (M. E. 4)	2	2	4
irect Current (E. E. 1)	2(3)	2(3)	
lternating Currents (E. E. 2)			4(3)
achine Work (Shop 7 and 8)	(6)	(6)	
hop Work (Shop 9)			(9)
achine Drafting (M. Des. 1)	(6)	(6)	(6)
ower Plant Operation (M. E. 5)		(3)	
OPTION IN ELECTRICITY.			
irect Current (E. E. 1)	2(3)	2(3)	
lternating Currents (E. E. 2)			4(3)
lumination (E. E. 3)		2(3)	
ower Plants (E. E. 4)			2
elephones and Telegraphs (E. E. 5)			3(3)
atteries (E. E. 6)	2(3)		
easuring Instruments (E. E. 7)	2(3)		
quipment Repairs (E. E. 8)		1(3)	
nterior Wiring (E. E. 9)	2(6)	1(3)	
utside Lines (E. E. 10)			1(3)
achine Work (Shop 10)			(3)
OPTION IN SURVEYING.			
lementary Surveying (Surv. 1 and 2)	3(6)	2(3)	
ountry Roads (Hwys. 1)			2(3)
rainage (Hyd. 2)			3(6)
ater Supply (Hyd. 3)	2(3)		
anitation (Hyd. 4)		2(3)	
oncrete (Mech. 1)	2(3)		2(3)
arm Buildings (Str. Des. 1)	1(3)		
oncrete Structures (Str. Des. 2)		1(3)	
arm Equipment (————)		1(3)	
arm Forestry (For. 1)			2(3)

*Students electing option in mechanics take foundry; others take mechanical drawing.

THE SCHOOL OF LIBERAL ARTS

The School of Liberal Arts has as its prime object the offering foundational and specialized instruction in language and literature a in social science. It aims to provide a stock upon which to graft techn cal and scientific education; to prepare the foundation for business, la journalism, administration, philanthropic work, the more responsib civil service positions and the higher teaching positions; and to affo the opportunity for general cultivation and refinement of the mind.

Departments

For administrative purposes the School of Liberal Arts includes t following departments: Ancient Languages and Philosophy, Economic English Language and Literature, History and Political Science, Jou nalism, Modern Languages, Public Speaking, Library Science and Musi These departments, however, do not represent the scope of liberal ar instruction provided by the University. Additional curricula in bacter ology, botany, chemistry, drawing, entomology, geology, mathematic pedagogy, physics, psychology and zoology are offered in the Schoo where such subjects have a basic application. Between the School Liberal Arts and the other schools there exists a close cooperation.

Courses and Degree

Curricula in the School of Liberal Arts are organized according to t group elective system. This arrangement undertakes to fit the cour to the student, rather than the student to the course, and particular enables the School to embody in its curricula the following fundament principles: First: such breadth of training as is characteristic of t well-educated man; second, a freedom of election that will motiva study and develop individuality and special aptitude; and, finally, t desirability of a student's deciding on a major interest so that there w be neither aimless nor dissipated effort.

By the group elective system a part of every student's curriculum prescribed. Such prescription, however, includes only what is bas and fundamental. The remainder of the student's work is elective.

Bachelor of Arts Degree

On satisfactory completion of two hundred and four trimester hou of college work, a student will be recommended for the degree Bachelor of Arts. Credits towards this degree are subject to the fo lowing regulations:

Regulations

Subject-Matter Groups. First of all, the student's curriculum is verned by four distinct subject-matter groups. These are:

A. Language and Literature: English, French, German, Greek, urnalism, Latin, Public Speaking, Spanish and Library Science.

B. Social Science: Economics, History, Philosophy,, Political Science d Sociology.

C. Natural Science: Bacteriology, Botany, Chemistry, Entomology, ology, Physics, Physiology and Zoology.

D. Mathematics and Psychology: Mathematics, Psychology and awing.

The administration of Groups A and B lies wholly within the School Liberal Arts; of Grops C and D, in other Schools of the University, th all of which the Art School cooperates.

Courses Open to Freshmen. The only courses open to freshmen are e following:

English 101-103, nine credit hours.

French 101-103, nine credit hours; 104-106 (for students who enter th two units in French), nine credit hours; 108-110 or 111-113 (for dents who enter with three or more units in Frech), nne credit urs.

German 121-123, nine credit hours; 124-126 (for students who enter th two units in German), nine credit hours; 128-130 or 131-133 (for dents who enter with three or more units in German), nine credit urs.

Latin 111-113 (for students who enter with two units in Latin), twelve edit hours; 118 (for students who enter with three or more units in tin), four credit hours.

Library Science 101, one credit hour, first term.

Public Speaking 101-103, three credit hours; 107-109, three credit urs; 113-115, six credit hours.

Spanish 141-143, nine credit hours; 144-146 (for students who enter th two units in Spanish), nine credit hours.

History 101, three credit hours; 102-103, six credit hours.

Zoology, 101-102, eight credit hours.

Botany 101, four credit hours.

Chemistry 101-103, twelve credit hours.

Mathematics, nine credit hours.

Educational Guidance, three credit hours.

Course Combination for Freshmen: In order to guarantee to stu- nts during their first year a sound balance of content and to prevent wise deviation from the fundamental principles of standard arts edu- tion, there has been arranged for all freshmen in this school the llowing combination of courses:

Composition and Rhetoric (Eng. 101-103), nine credit hours.
Reading and Speaking (P. S. 101-103), three credit hours.
A Foreign Language, nine credit hours.
A Laboratory Science, twelve credit hours.
History or Political Science, six credit hours.
Mathematics or a Freshman elective* nine credit hours.
Library Methods (L. S. 101), one credit hour.

Group Prescription

A. Language and Literature: English 101-103, Public Speaking 101-103 and Library Science 101 are required of all students during their freshman year.

The student's combined work in high school and university must include at least two foreign languages. When the student enters with six units in foreign languages, he will be required to secure nine hours of credit in college; when the student enters with four units in foreign languages, he will be required to secure eighteen credits in the University; when the student enters with two units in foreign languages, he will be required to secure twenty-seven credits in the University; when the student enters with one unit in foreign languages, he will be required to secure thirty credits in the University; when the student enters with no units in foreign languages, he will be required to secure thirty-six credits in the University. Less than one unit in a foreign language will not be recognized.

B. Social Science: Every student must secure credit in the social science group for not less than eighteen trimester hours. At least nine of these credits must be in history. If, however, the student offers one or more high school units in history, then only nine trimester hours of credit in this group are prescribed.

C. Natural Science: Every student must secure credit for not less than nine trimester hours in either bacteriology, botany, physiology or zoology. If, however, the student offers one high school unit in any one of these four biological sciences, then no additional college credit is required. Every student must also secure credit for at least nine trimester hours in either chemistry, geology or physics. Students entering with neither chemistry nor physics must take a one-year's course in one of the two.

D. Mathematics and Psychology: Every student must secure credit either in high school or university for algebra through quadratics and for plane geometry. He must in addition secure credit in the University for at least nine trimester hours in mathematics.

*If requirements in mathematics have been satisfied prior to entering the University or before the end of the freshman year, this time may be devoted to other freshman subjects.

Majors and Minors. All students registered in the School of Liberal Arts must secure at least sixty-three trimester hours of credit in either Group A or Group B, and at least twenty-seven trimester hours, or their equivalent, in some one subject of the group selected. All students of this School must also secure twenty-seven hours of credit in one of Groups A. C and D or B. C and D (according to the group in which the major is chosen), and at least eighteen trimester hours, or their equivalent, in some one subject of the group selected. The student is not permitted to secure more than one hundred and two trimester hours of credit in any one group; in this School, this applies to Groups A and B only.

Relations with Other Schools of the University. Any student, after securing one hundred and two trimester hours of credit in subject-matter Groups A, D, C and D, may, with the permission of his adviser, elect six hours a trimester for each of the remaining two years from work offered in any other School.

Reserve Officers' Training Corps. Students completing the curriculum of the Reserve Officers' Training Corps, as defined in General Order 49 of the War Department, will be allowed six trimester credits towards the Bachelor of Arts degree. These credits, however, will count as part of the six hours a trimester for the last two years, taken in other Schools, as explained in the preceding section.

Thesis. In the senior year a thesis in the student's major field of study will be required of all candidates for the Bachelor of Arts degree.

Advisers. The Dean and the Secretary of the School of Liberal Arts, together with the professor representing a prospective major, become the adviser of each student during his freshman year. The relation between adviser and student will be frank and fraternal, without restraint on either side. After the first year, the professor under whom the student does the major portion of his work becomes his adviser.

General Restrictions on Elections. Every student in electing work must bear in mind the following general restrictions: (1) Only courses may be chosen for which the student has had sufficient prerequisite training; (2) Only such courses may be elected as do not conflict on the University class-schedule; (3) A study once elected must be pursued through one year or to the completion of the subject; (4) The student's electives must exhibit a definite purpose; (5) All elections are subject to the approval of the student's adviser and one of the executive officers of the School of Liberal Arts.

Graduate Courses

In certain departments of the School of Liberal Arts provisions are made for instruction toward advanced degrees. A description of courses

so offered follows the exclusively undergraduate courses. The general requirements for graduate degrees will be found in the sections devoted to the Graduate School.

Some time before the end of his first year in college the student must decide on his major study. This choice will be determined by the field that the student expects to be qualified to enter upon graduation. In order to acquaint the learner with some of the major interests for which the Arts faculty assume responsibility, the following type curricula sequences are submitted:

English Teaching, the Ministry, Literary Work or General Education: A student intending to become a teacher of English, to enter the ministerial field, to devote himself to literary work, or to acquire a thorough general education would usually major in the English Language and Literature, and during the last three years study: (sophomore year) English, Foreign Languages, History or Political Science, Psychology, or Mathematics, or Logic, Public Speaking, Military Instruction and electives; (junior year) English, Foreign Lanuages, History, Philosophy and electives; (senior year) English, Foreign Languages, Economics, Political Science and electives.

Foreign Language Teaching, Foreign Political and Commercial Connections or Translation Work: A student wishing to follow the various literary pursuits would major in Foreign Languages and during the last three years would study: (sophomore year) his major foreign language, English, a second foreign language, and electives consisting of Social Science and Natural Science; (junior year) his major language, English, a second language and electives consisting of Economics, Logic, Ethics and Psychology; (senior year) his major language, English a second language and electives consisting of Philosophy, Political Science and History.

Law, History and Political Science Teaching, Politics or Consular Service: A student wishing to follow History and Political Science would study during the last three years: (sophomore year) American State Government, American History, European History, Current History, Modern Language, Economics, Finance, Public Speaking, Psychology; (junior year) Constitutional Law, Municipal Government, European and American; Governments of Europe, Money and Banking, Sociology, Current History, European History, Public Speaking, Logic, Research in Political Science, Historiography; (senior year) Political Problems and Practical Politics Latin American Republics, American Political Ideals, The Far East, American Diplomacy, International Law, Ethics, Thesis

Public Speaking: Students preparing for the Law, the Ministry, Social Work, general or special lecture work, or any other professions of which public speaking is not only the base but also the positive medium through

which the professional activities must operate, may major in Public Speaking. In addition to the freshman studies prescribed for students in the School of Liberal Arts, the course includes the following: (sophomore year) Public Speaking, general and special; English Language, and electives consisting of Foreign Language Social Science and Natural Science; (junior year) Public Speaking, general and special; English Language, including Literature; and electives consisting of Foreign Language, Economics, Logic, Eethics, and Psychology; (senor year) Public Speaking, general and special; English Language, including Literature; and electives from Foreign Language, Philosophy, Political Science and History.

Economics and Sociology: Problems in Economics and Sociology form the subject matter of most legislation; these courses are therefore intended in a general way to train men and women for citizenship. More particularly, to provide economic and sociological training for technical students, certain required and elective courses have been worked out in consultation with the deans, supplementary to the work of the different schools. Primarily, those students who wish to follow any of the various lines of business are advised to major in economics and during the last three years would usually study: (sophomore year) a foreign language, social psychology, principles of economics, industrial history of the United States, markets and marketing, technical writing, general oradvanced accounting; (junior year) business law, corporation and finance, money and banking, labor problems, rural economics, rural organization; (senior year) public finance, insurance, transportation, scientific management, general sociology, political science and history, international relations.

ENGLISH LANGUAGE AND LITERATURE

For Short-Course Students

Eng. 1-2. Practical Composition. Three credit hours, first term. Three credit hours, second term. First year. Prerequisites, minimum entrance requirements for short-course students.

Elements, thought processes, types, structure, grammar, mechanical details and common errors of plain composition. Study and preparation of commercial letters, forms, articles, reports and advertisements. Regular practice in the writing of long and short themes.

Eng. 3. Vocational Publications. Two credit hours, third term. First year. Prerequisite, Eng. 1-2.

Reading and study of the leading periodicals, representative bulletins and significant association reports of the technical vocations, with special attention to agriculture and engineering. Written assignments.

FOR UNDERGRADUATES

Eng. 101-103. Composition and Rhetoric. Three credit hours each term. Freshman year. Prerequisites, minimum entrance requirements in English. Required of all four-year students.

Parts, principles and conventions of effective thought communication. Reading, study and analysis of standard contemporary prose specimens. Daily short themes and periodical essays.

Eng. 104-106. Technical Writing and Scientific Thought. Two credit hours each term. Prerequisite, Eng. 101-103.

Advanced exposition. Principles of technical composition; examination and analysis of scientific bulletins, typical articles from technical publications, and scholarly monographs. Study of specimens of the best scientific thought. Practice in the composition of the leading forms of technical writing.

Eng. 107-108. Nineteenth Century Poetry. Three credit hours each term. First and second terms. Prerequisite, Eng. 101-103 or approval of the instructor.
the instructor.

Reading and criticism of Wordsworth, Coleridge, Byron, Shelley, Keats, Tennyson, Browning, Swinburne and their most distinguished contemporaries. Lectures on the history of English poetry, with special attention to the Romantic movement and the age of Victoria. Discussion of the nature of poetry, versification, style, critical methods and the relation of literature to social forces.

Eng. 109. The Essay. Three credit hours. Third term. Prerequisite, Eng. 101-103 or approval of the instructor.
approval of the instructor.

Development of the artistic elements of modern English prose and of the essay as a literary type. Reading and criticism of Bacon, Swift, Addison, Lamb, DeQuincey, Carlyle, Emerson, Macaulay, Ruskin and Arnold.

Eng. 110. English Words. Three credit hours. First term. Prerequisite, Eng. 101-103. Not given in 1920-21.

Practical study of the origin, growth, nature and use of the English vocabulary.

Eng. 111-112. Literature in America. Three credit hours each term. Second and third terms. Prerequisite, Eng. 101-103. Not given in 1920-21.

Critical study of Irving, Cooper, Bryant, Poe, Hawthorne, Emerson, Whittier, Longfellow, Lowell, Whitman and recent writers. Consideration of national life in American letters and America's contributions to world literature. Lectures, discussions, reports.

Eng. 113-114. Novelists of the Nineteenth Century. Three credit hours each term. First and second terms. Prerequisites, Eng. 101-103, Eng. 107-108 and Eng. 109. Given in 1920-21 and alternate years.

Reading of Scott, Jane Austen, Dickens, Thackeray, Hawthorne, George Eliot, Meredith, Hardy, Stevenson and others. Critical analysis in class of a few model novels, with special reference to characterization, plot and setting. Preparation of written critiques and short theses on assigned topics. Historical development of the novel traced by lectures.

Eng. 115. The Short Story. Three credit hours. Third term. Prerequisites, Eng. 101-103, Eng. 107-108 and Eng. 109. Given in 1920-21 and alternate years.

Lectures on the development and structure of the short story. Reading and study of all the recognized types. Critical reports and story-writing.

Eng. 116. Early English Drama. Three credit hours. First term. Prerequisites, Eng. 101-103, Eng. 107-108 and Eng. 109. Not given in 1920-21.

Development of pre-Shakespearean drama; examination of liturgical, mystery and miracle plays, Robinhood and St. George plays, moralities and interludes, and the early regular comedies and tragedies.

Eng. 117-118. Elizabethan Drama. Three credit hours each term. Second and third terms. Prerequisites, Eng. 101-103, Eng. 107-108, Eng. 109 and Eng. 116. Not given in 1920-21.

Shakespeare, his principal contemporaries and his immediate successors. Analysis, interpretative study and rapid reading. Consideration of Shakespeare in relation to his sources, his stage and general Elizabethan life. Lectures, collateral readings and reports.

Eng. 119-120. Modern English Drama. Three credit hours each term. First and second terms. Prerequisites, junior or senior standing and the approval of the instructor. Given in 1920-21 and alternate years.

Reading of representative plays by Dryden, Wycherley, Congreve, Farquahar and Vanbrugh; Goldsmith and Sheridan; Wilde, Pinero, Jones, Shaw, Galsworthy, Barker, Yeats and Synge; Fitch, Moody, Thomas and Mackaye. Written criticisms and reports. Lectures on the history of the English drama from 1642 to the present time.

Eng. 121. Technique of the Drama. Three credit hours. Third term. Prerequisites, junior and senior standing, Eng. 117-118 or Eng. 119-120, and approval of the instructor. Given in 1920-21 and alternate years.

Principles of dramatic construction and criticism. Lectures, discussions and practice.

FOR GRADUATES

Eng. 201. Seminar. Two credit hours each term.
Subject according to needs of students in attendance.

ANCIENT LANGUAGES AND LITERATURES

Greek

A. L. 101-103. Beginners' Greek. Three credit hours each term.
Drill and practice upon the fundamentals of Greek grammar and the acquisition of a vocabulary. To be followed by A. L. 104-106.

A. L. 104-106. Grammar, Composition and Translation of Selected Prose Works. Three credit hours each term. Second year course. Second-year course. Prerequisite, A. L. 101-103 or equivalent.
For those who offer Greek for entrance.

A. L. 107-109. Greek Literature and Composition. Three credit hours each term. Prerequisite, A. L. 104-106 or equivalent.
Study and translation of Greek prose and lyric poetry.

A. L. 110-112. Greek Drama. Three credit hours each term. Prerequisite, A. L. 107-109.
A study of the qualities of Greek dramatic poetry and Greek comedy. Translation of selected representative works and modern imitations of older works.

Latin

A. L. 121-123. Latin Prosody and Mythology. Three credit hours each term.
Study and translation of selections from Virgil, together with a study of his life and influence. This course may be offered for entrance or taken as college work by those who offer only two units in Latin for entrance.

A. L. 124-126. Latin Grammar, Composition and Translation. Three credit hours each term.
Review of Latin grammar. Much practice in prose composition. Translation of selections from Livy, Cicero and Sallust. For those who offer four units for entrance.

A. L. 127-129. Study of Roman Life and Customs. Three credit hours each term. Prerequisite, A. L. 124-126.
Translation of selections from the Odes and proverbs of Horace and the letters and histories of Tacitus. This course alternates with A. L. 130-132.

A. L. 130-132. Critical Study of Latin Drama. Three credit hours each term. Prerequisite, A. L. 124-126.

Selected plays of Plautus and Terence. The course alternates with A. L. 127-129.

A. L. 133-135 History of Roman Literature. Three credit hours each term. Prerequisite, A. L. 127-129 or A. L. 130-132.

Lectures and translation of representative works.

MODERN LANGUAGES AND LITERATURES

French

FOR UNDERGRADUATES

M. L. 101-103. Elementary French. Three credit hours each term.

Drill in pronunciation, elements of grammar, composition, conversation and easy translation. For students who have entered college without French. To be followed by M. L. 104-106.

M. L. 104-106. Second-year Cource. Grammar Continued. Three credit hours each term. Prerequisite, M. L. 101-103 or equivalent.

Composition, conversation, dictation and reproductions. Reading and translation of selections from modern prose and poetry. For students who offer French for entrance.

FOR ADVANCED UNDERGRADUATES

M. L. 107-109. Scientific French. Three credit hours each term. Prerequisite, M. L. 104-106.

Reading and translation of scientific texts and journals. Discussions of word structure.

M. L. 110-112. Development of the French Novel. Three credit hours each term. Prerequisite, M. L. 104-106.

Detailed study of least three French novelists (one each term) with careful study of their lives, works and influence. This course alternates with M. L. 113-115.

M. L. 113. Seventeenth Century French Drama. Three credit hours. First term. Prerequisite, M. L. 104-106.

Analysis of the drama of the seventeenth century. Translation, collateral reading and reports. Alternates with M. L. 110-112.

M. L. 114. Eightenth Century French Drama. Three credit hours. Second term. Prerequisite, M. L. 113.

A continuation of French 113.

M. L. 115. Nineteenth Century French Drama. Three credit hours. Third term. Prerequisite, M. L. 114.

Continuation of French 114, with recent developments in modern drama.

M. L. 116-118. History of French Literature. Three credit hours each term. Prerequisite, M. L. 110-112, or M. L. 113-115.

Study of French literature from the earliest times to the present. Reading and translation of representative works. Texts and lectures.

M. L. 119-121. French for Engineers. Five credit hours each term.

This course is a combination of M. L. 101-103 and M. L. 104-106. Drill upon the essentials of grammar. Oral exercises and composition. Study of texts from the beginning of the course. Practice in translation at sight. Recitation periods.

German

For Undergraduates

M. L. 121-123. Beginning German. Three credit hours each term.

Drill in pronunciation, elements of grammar, composition, conversation and dictation. For students who do not offer German for entrance.

M. L. 124-126. Second-year German. Three credit hours each term. Prerequisite, M. L. 121-123 or equivalent.

Syntax, composition, conversation, translation and reproduction. Selections from modern prose, poetry and fiction. For students who offer German for entrance.

For Advanced Undergraduates

M. L. 127-129. Scientific German. Three credit hours each term. Prerequisite, M. L. 124-126.

Reading and translation of scientific texts and periodicals. Original reproductions of texts read. Lectures on scientific nomenclature.

M. L. 130. Goethe and the Noved. Three credit hours for first half-year. Prerequisite, M. L. 124-126. To be followed by M. L. 131. Given in alternate years.

Critical study of the life and works of Goethe together with the principals and development of the modern German novel.

M. L. 131. Schiller and the Drama. Three credit hours for the second half-year. Prerequisite, M. L. 130.

Detailed study of the life and works of Schiller and his relation to the drama.

M. L. 132. Lessing and German Prose. Three credit hours for the first half-year. Prerequisite, M. L. 124-126. To be followed by M. L. 133. This course alternates with M. L. 130.

M. L. 133. Heine and German Poetry. Three credit hours for the second half-year. Prerequisite, M. L. 132.

Extensive study of Heine and German Poetry. Collateral reading.

M. L. 134-136. History of German Literature. Three credit hours each term. Prerequisite, M. L. 130-131 or M. L. 132-133.

Study of German literature from the earliest times to the present. Reading and translation of representative works. Texts and lectures.

M. L. 137-139. German for Engineers. Five credit hours each term. Five recitation periods. Senior year.

This course is a combination of M. L. 121-123 and M. L. 124-126. Drill upon the fundamentals of grammar and syntax. Conversation and written reproductions of texts read. Original composition. Sight reading and much translation.

Italian

M. L. 138-140. Elementary Italian. Three credit hours each term.

Open to those who have had two years of either French or Spanish. A thorough study of the essentials of Italian grammar, with the aim of acquiring a working vocabulary. Drill upon syntax. Constant practice in translation and easy composition.

Spanish

At the end of the Sophomore year a student should be able to converse in Spanish as well as read and write it. The subject matter involved will be such as is ordinarily encountered by persons residing in Spanish-speaking countries. After this basic work a student has the option of two fields of specialization. The first line of specialization is concerned with the commercial needs of the United States in its relation, particularly, with the South American republics. Subjects receiving special attention are the trade interests of the proprietor and agent, The second line of major study has to do with the special interests of scholars and diplomats.

For Undergraduates

M. L. 141-143. Grammar; Conversation. Three credit hours each term. Freshman year.

Writing and reading of easy texts.

M. L. 144. Thorough Knowledge of Grammar. Three credit hours. First term. Sophomore year. Prerequisite, M. L. 143 or its equivalent.

Emphasis laid on the verb.

M. L. 145. Reading and Conversation. Three credit hours. Second term. Sophomore year. Prerequisite, M. L. 144 or its equivalent.

Reading of easy periodicals with direct application of M. L. 144. All instruction from this point on is given in Spanish.

M. L. 146. Letter Writing. Three credit hours. Third term. Sophomore year. Prerequisite, M. L. 145 or its equivalent.

Study of American Commercial methods in foreign countries.

M. L. 147-148. Vocabulary of Trade. Three credit hours each term. First and second terms. Junior year. Prerequisite, M. L. 146.

Special attention to the names of articles of hardware, agricultural implements, engineering instruments, etc. Trade problems assigned.

M. L. 149. Business Correspondence and Etiquette. Three credit hours. Third term. Junior year. Prerequisite, M. L. 148.

Direct application of M. L. 148 as used in the soliciting of trade. Actual copies of letters of South American business houses are taken as models.

M. L. 150. Methods of Advertising in South American and Mexico compared with those of the United States. Three credit hours. First term. Senior year. Prerequisite, M. L. 149, Jr. 112.

M. L. 151-152. Study of Commercial Development. Three credit hours each term. Second and third terms. Senior year. Prerequisite, M. L. 150, Ec. 101-102, Pol. Sc.

Study of commercial development and possibilities of the South American countries and the Philippines. Lectures by recognized authorities.

M. L. 153-154. Early Spanish Literature. Three credit hours each term. First and second terms. Junior year. Prerequisite, M. L. 146, H. 104-106, Pol. Sc.

Development of Spanish literature from the heroic period to the seventeenth century.

M. L. 155. Seventeenth and Eighteenth Century Literature. Three credit hours. Third term. Junior year. Three credit hours. First term. Senior year. Prerequisite, M. L. 154.

Critical study of selections from Cervantes, Calderon, Perez, Quevedo and others.

M. L. 156. Spanish Literature after the Eighteenth Century. Three credit hours. Second term. Senior year. Prerequisite, M. L. 155.

Selected readings from Ferrari, Ayala, Ibanez, and their contemporaries.

M. L. 157. Literature of Spanish-Speaking Countries. Three credit hours. Third term. Senior year.

Lectures with collateral reading, of the development of thought of the Latin-American countries and the Philippines.

M. L. 158-160. Spanish for Engineers. Five credit hours each term. Five recitation periods. Senior year.

Drill upon the fundamentals of grammar and syntax. Conversation and written reproductions of texts read. Original composition. Sight reading and much translation.

HISTORY AND POLITICAL SCIENCE

History

H. 101-103. Current History. One credit hour each term.

A study of the political, social, and economic problems of the day. Lectures and assignments.

H. 104. American Colonial History. Two credit hours. First term. Lectures. Term reports.

H. 105. American Civil War and Reconstruction. Two credit hours. Second term.

Lectures. Term reports.

H. 106. Development of American Nationality. Two credit hours. Third term.

Lectures. Term reports.

H. 107. Latin American Republics. Two credit hours. Third term. Senior year.

Influence of United States in Central and South America; Monroe Doctrine; Pan Americanism.

H. 109-111. Modern and Contemporary History. Two credit hours each term.

A study of the main events in European and American history since 1815.

H. 112. Imperialism and World Politics. Two credit hours. Second term. Not given in 1920-21.

A study of the political development in Europe, Canada, United States, and South America. Colonial expansion, League of Nations. Lectures and assigned readings.

H. 113. Origins and Issues of the World War. Two credit hours. Third term. Not given in 1920-21.

H. 114-115. The Far East. Two credit hours each term. Second and third terms. Senior year.

A study of the principal events—political, social and economic—in the development of the nations of the Far East. Special amphasis will be given to the relations between the nations of the Far East and United States.

H. 116-118. Epochs in European History. Two credit hours each term. Not given in 1920-21.

H. 119-121. Historiography. Two credit hours each term. Junior year. Not given in 1920-21.

A study of the method of writing history. Examination of the methods of prominent historians, and the development of assigned topics in technical form. Extensive use will be made of the material in the Library of Congress.

Political Science

Pol. Sc. 101-103. Government of the United States. Two credit hours each term.

A study of the governmental system of the United States. Evolution of the Federal Constitution; functions of the Federal Government; the executive, legislative and judiciary departments. Lectures and assigned cases and readings.

Pol. Sc. 104-105. American State Government. Two credit hours each term. Sophomore year.

The development of American state constitutions; the structure and workings of state governments. Lectures and assigned readings.

Pol. Sc. 106-108. Constitutional Law of United States. Two credit hours each term. Prerequisites, Pol Sc. 101-103 and 104-105.

A study of the American constitution and its interpretation as based on the decisions of the Federal Courts and the Supreme Court of the United States. Lectures and assigned cases.

Pol. Sc. 109-110. Governments of Europe. Two credit hours each term. First and second terms. Prerequisites, Pol. Sc. 101-103 and 104-105. Not given in 1920-21.

A comparative study of the political organization of the principal states of Europe. Classification of forms; separation of powers; source of powers. Lectures and assigned readings.

Pol. Sc. 111-112. Municipal Government. Two credit hours each term. Second and third terms. Second term: Government of American Cities. Third term: Government of European Cities. Prerequisites, Pol. Sc. 101-103 and 104-105. Not given in 1920-21.

A study of city government. Source of power; organization and administration. City manager and commission forms of government. Lectures and assigned readings.

Pol. Sc. 113-115. American Diplomacy. Two credit hours each term. Senior year. Not given in 1920-21.

A survey of the beginnings of American diplomacy. Important foreign relations. Treaties and treaty making. Lectures and assigned readings.

Pol. Sc. 116-118. International Law. Three credit hours each term. Senior year. Given in 1921-22.

A study of the nature and sources of international law. Rights and duties of states; freedom of the seas. Lectures and assigned cases.

Pol. Sc. 119-120. Political Parties and Practical Politics. Two credit hours each term. First and second terms. Senior year. Not given in 1920-21.

The organization and methods of modern political parties; growth of party system. Lectures, assigned readings, and visits to Congress.

Pol. Sc. 121. Contemporary Political Problems of the United States. Two credit hours. Given in 1921-22.

National and international problems of current interest. Foreign relations; suffrage; labor problems. Lectures and assigned readings.

Pol. Sc. 122-123. American Political Ideals. Two credit hours each term. First and second terms. Not given in 1920-21.

American ideals as found reflected in the writings of Hamilton, Jefferson, Webster, and other great Americans. Lectures and assigned readings.

Pol. Sc. 124-126. Research in Political Science. Two credit hours each term. Given in 1921-22.

Practical work in the development of assigned problems in the College library and in the Library of Congress.

ECONOMICS

Econ. 101-102. Elements of Economics. Three credit hours each term. First and second terms. Not open to freshmen, but required of students who elect to major in this department.

Elementary phases of the present system; production, exchange, distribution and consumption of wealth; the monetary system; public finance; land and labor problems; monopolies; taxation and other similar topics.

Econ. 103. Corporation Finance. Two credit hours. First term. Prerequisite, Econ. 101.

Methods employed in the promotion, capitalization, financial management, consolidation and reorganization of business corporations.

Econ. 104. Money and Banking. Two credit hours. Second term. Prerequisite, Econ. 101.

A study of the nature and functions of money; standards of value and prices; credit; bank clearings and exchanges; history of American and foreign banking; the stock exchange and the money market.

Econ. 105. Public Finance and Taxation. Two credit hours. Third term. Prerequisite, Econ. 101.

A study of public expenditures, receipts, indebtedness and financial administration; theories on public expenditures; theories of taxation; the growth and nature of public credit; the forms of public debts; federal, state and municipal budgets.

Econ. 106. Economic History of the United States. Three credit hours. First term.

A study of the growth of industry, agriculture, commerce, transportation from the simple isolated communities of the early colonies to the complex industrial and commercial society of to-day; its effect on the population in terms of successive new adaptations.

Econ. 107. Rural Economics. Two credit hours. Second term.

Agricultural markets and marketing; rural credit; tenancy and ownership; transportation; free delivery; intensive and extensive farming and kindred topics. Use will be made of bulletins published by the United States Department of Agriculture.

Econ. 108. Elements of Accounting. Three credit hours. Second term.

The application of fundamental principles of debit and credit entries to different forms of bookkeeping; farm accounting; bank accounting; financial statements.

Econ. 109. Advanced Accounting. Three credit hours. Third term.

A continuation of Econ. 108, in which bulletins of the United States Department of Agriculture will largely furnish the subject matter. It will include a study of voucher systems and financial statements of government and private corporation accounting.

Econ. 110-112. Commercial Law. Three credit hours each term.

The aim of this course is to train students for practical business affairs by giving the legal information necessary to prevent the common business errors. The following are some of the phases of the work: Requisites and forms of contracts and remedies for their breach; sales, passage of title, warranties, and remedies; negotiable instruments, assignment negotiation, and liability of signers; agency; title, abstracts, mortgages, leases of property, etc.

SOCIOLOGY

Soc. 101. Elements of Sociology. Three credit hours. Second term.

The life of society as affected by rural conditions, cities, wealth, poverty, heredity, immigration, etc.; the nature of social organization; different phases of social evolution; problems and principles of social control.

Soc. 102. Charities and Corrections. Three credit hours. Third term. Not given in 1920-21.

Soc. 103. Rural Sociology. Three credit hours. Third term.

Problems of rural life in the light of modern social science; federal and state organizations intended to promote rural welfare; purpose and achievements of such voluntary organizations as the Grange, the Farmers' Union, village improvement associations, boys' and girls' clubs, cooperative societies, etc.

Soc. 104. Social Psychology. Three credit hours. First term.

This course deals with such psychological matters as underlie the work in the fields of sociology and other social sciences. The fundamental instincts as dynamic forces in the individual and in society; their development, organization and control receive special attention.

Soc. 105. Social Psyschology. A continuation course of Soc. 104. Three credit hours. Second term.

A psychological analysis of some main features of an organized modern state.

Soc. 106. Logical Aspects of Sociology. Three credit hours. Third term.

This course seeks to apply the principles of logic to social phenomena. Nature of causal proof, grounds for universal judgments, statistical arguments, circumstantial evidence, analogical inference, experimental investigation, and nature and function of reasonable doubt in inductive inferences will be studied in their basic relation to actual sociological conditions. Practical problems of everyday life in their relation to the social order as discussed in the current literature and the press will furnish material for the student to test.

Soc. 107. Philosophical Aspects of Sociology. Three credit hours. First term.

A rapid survey of the leading systems of thought respecting social phenomena. The aim will be to show the genetic development of present day theory.

Soc. 108. Philosophical Aspects of Sociology. A continuation course of Soc. 107. Three credit hours. Second term.

The bearing of various concepts of ultimate reality, such as dualism and monism, atomism, theism and pantheism, on actual life conditions within various social groups.

Soc. 109. Ethical Aspects of Sociology. Three credit hours. Third term.

The application of moral principles to social phenomena. Nature of moral judgments and underlying ethical concepts as illustrations in current social problems.

JOURNALISM

The curriculum in journalism not only gives the student an excellent knowledge of English and subjects coincident with general education, but provides courses wherein direct application of such knowledge is shown in actual publication of the modern newspaper. Besides taking up in a general way practically all phases of newspaper work, some courses in the curriculum are designed to give the student a knowledge of the specific conditions that apply to the development of trade journals, periodicals, magazines, and the weekly country paper.

Jour. 101-102. News Writing. Three credit hours each term. First and second terms. Sophomore standing required.

What constitutes news; news values; sources of news; gathering of news; types of newspaper stories.

Jour. 103. The Daily Paper. Three credit hours. Third term. Sophomore standing required.

A study of the methods and styles of the big metropolitan dailies; functions of a daily paper; file system; morgue; analysis of weekly papers; Sunday supplements; and syndicates.

Jour. 104. History of Journalism. One credit hour. First term. Junior standing required.

A study of journalism since its beginning, with special attention to the various types that developed in the nineteenth century; effect of journalism on world civilization and industrial development; relationship of journalism to the arts and sciences; present standards.

Jour. 105-107. Newspaper Editing. Two credit hours each term. Junior standing required.

Copy reading; proof-reading; general editorial supervision; type selection; printers' marks; problems of the copy-reader and proof-reader.

Jour. 108-110. News and Editorial Writing. Three credit hours each term. Prerequisite, Journalism 101-102.

The interview; general reportorial duties; newspaper correspondence; human interest; rewrites; interpretation of news; function of an editorial in the newspaper; study of sources of material for editorials; principles embodied in news and editorial writing; relationship of the editorial to the news story; exchanges.

Jour. 111. The Country Newspaper. Two credit hours. First term. Senior standing required.

A study of the conditions affecting the country paper; sources of news for it; kinds of editorials; and different emphasis placed on news values; and the problems confronting the average small town weekly paper in obtaining paper supplies; and putting news in type; advertising and circulation problems; relationship of the paper to its community.

Jour. 112. The Trade Journal. Two credit hours. Second term. Senior standing required.

Kinds of trade journals and their requirements for special articles; agricultural weeklies; publicity departments of great industrial organizations, and methods of operation.

Jour. 113. Feature Writing. Three credit hours. First term. Senior standing required.

Nature of the feature story; the narrative and the articles; kinds of material, and sources of material; treatment of topics and methods of handling features; markets for such material.

Jour. 114-115. Agricultural and Industrial Feature Writing. Three credit hours each term. Second and third terms. Senior standing required.

Applications of principles embodied in Journalism 113 to articles and stories of an agricultural nature, with particular reference to existing agricultural magazines, weekly farm papers, country papers, and agricultural departments of big dailies.

Special study of the technical demands of trade and industrial journals, kinds of material they are likely to accept, and a general application of the principles of Journalism 113 in preparation of articles for such papers.

Jour. 116. Principles of Journalism. One credit hour. First term. Senior standing required.

Ethics of the newspaper profession from the view of the editorial offices, the business office and the news department; relationship of the several departments of the newspaper and courtesies between newspaper men; laws of copyright, author's rights and libel.

Jour. 117-118. Business Management, Circulation and Advertising. One credit hour each term. Second and third terms. Senior standing required.

Problems encountered by the business manager, circulation manager, and advertising manager; methods of increasing circulation; development of new territory; analysis of markets; the advertising agency; national and local advertising; special type for advertising display; advertising rates; relationship of the cost of production of the newspaper to circulation and advertising.

Jour. 119. Head Writing, Make-up, and Mechanical Details. Two credit hours. First term. Senior standing required.

118. Head writing, make-up, and mechanical details. Two credit hours, first term. Senior standing required.

Kinds of type for use in heads; relationship of the head to the story; what the head should embody; mechanical details of the head; general

principles to be observed in making up the paper; placing of advertising; mechanics of the composing-room, the sterotyping-room, the press-room and problems in each.

Jour. 120-121. Practical Newspaper Operation. Ten hours each week. Second and third terms. Senior standing required.

This time will be devoted to the production of a regular weekly country newspaper, a monthly magazine, and a daily paper; a newspaper plant is to be installed at the University, and students will get actual experience in almost every phase of newspaper creation and production. Conditions in the modern newspaper plant are to be duplicated in every detail possible. Students will be given practical application of all the principles acquired during their previous three years of study.

PUBLIC SPEAKING

(In Preparation for Special Professions)

It is generally recognized that certain professions, using this term in both a special and a broad sense, not only have public speaking as a base, but that the very character of these professions is such that public speaking is the medium through which the professional activities must to a large extent operate. This particularly is true in the Law, in the Ministry, in social service work, and in lecture and extension work for public and private organizations.

The curriculum in Public Speaking, with special reference to professions, will be offered to students preparing for the professions named above and to those preparing for such other professions as justify public speaking as a major study. In this curriculum the student will elect from all the subjects offered in the School of Liberal Arts those particular studies which will best prepare him for the profession in view. Public speaking, both generally and specially applied, will run through the entire curriculum, and at the different stages of the student's progress in acquiring he will be taught to give oral expression to that which he has acquired. The general studies pursued give the educational preparation; the drill and oral expression create and develop the medium through which this preparation can be utilized and made efficient.

After the freshman year the students in this curriculum are elective except the prescribed work in public speaking and English language. In addition to the regular courses in public speaking, specially adapted and prescribed courses will be given.

P. S. 101-103. Reading and Speaking. One credit hour each term. Freshman year.

A practical course in delivery. The principles and technique of vocal expression; enunciation, emphasis, inflection, force, gesture and genera

delivery. Delivery of oratorical selections by students before the class, with criticisms and suggestions by instructor. Delivery of original speeches. Individual drill by appointment with instructor.

P. S. 104-106. Oratory. One credit hour each term. Open to students who have credit for P. S. 101-103.

The rhetoric of oral discourse. The speech for the occasion. Study of oratorical masterpieces. Practice in the writing and delivery or orations and general speeches and addresses.

P. S. 107-109. Extempore Speaking. One credit hour each term. Open to all students.

Theory and methods. The psychology of public speaking. Class exercises in speaking extemporaneously on assigned topics.

P. S. 110-112. Debate. One credit hour each term. Open to students who have credit for P. S. 101-103.

A study of the principles of argumentation. Study of masterpieces in argumentative oratory. Class exercises in debating.

P. S. 113-115. Oral Reading. Two credit hours each term. Open to all students.

Primarily for students intending to be teachers. Study of the technique of vocal expression. The oral interpretation of literary masterpieces. Study of methods of teaching oral reading in the schools.

P. S. 116-118. Oral Technical English. Three credit hours each term.

The preparation and delivery of lectures, speeches, reports, etc., on technical subjects. All composition required in the preparation of much of the above technical matter is criticized and corrected before the oral delivery. Required of engineering students.

P. S. 119-121. Advanced Oral Technical English. Three credit hours each term.

A continuation of P. S. 116-118. Required of engineering students.

LIBRARY SCIENCE

L. S. 101. Library Methods. One credit hour. First term. Freshman year. Required of all Liberal Arts students. Elective for others.

This course is intended to help students use the library with greater facility. Instruction will be given by lectures and by practical work with the various catalogs, indexes and references books. This course considers the general classification of the library according to the Dewey System. Representative works of each division are studies in combination with the use of the library catalog. Attention is given to periodical literature, particularly that indexed in the Reader's Guide and Agri-

cultural Index. Book selection and a short bibliography on an assigned subject complete this course.

L. S. 102. Advanced Library Methods. Two credit hours. Second term. Prerequisites, L. S. 101 and Eng. 101-103.

A continuation of Library Science 101, emphasizing selection and purchase of books; administration of libraries; elementary work in classifying, cataloging and mending of books; charging and loan desk practice. Designed especially for those interested in prospective library work.

MUSIC

In the Department of Music the courses of study are thorough and comprehensive, and the methods of instruction are along modern lines. The aim of this department is to teach music not only as an accomplishment, but also as an aid in the development of the highest type of manhood and womanhood. The ultimate aim is to train for life and to use the art of music as a means of intellectual, æsthetic and moral culture.

The instruction is planned to meet the personal needs of each student. Since students possess varying degrees of talent and diligence, it is impossible to estimate exactly the time required to complete a curriculum of study. Each student is advanced as rapidly as talent, application and thoroughness warrant.

PIANO COURSES

First Grade. Beyer's Method, Book I of Matthews' Graded Course; studies in sight reading and pieces suitable for this grade.

Second Grade. Matthews' Graded Course, Book II, Köehler Studies, op. 242, and selections suitable to this grade.

Third Grade. Matthews' Graded Course, Books III and IV; Czerny's Etudes de la Velocite, op. 120 and 299 Book I; Lichner's sonatas; compositions from Mendelsohn, Mozart, Godard and others.

Fourth Grade. Matthews' Graded Course, Books V and VI; Czerny's Etudes de la Velocite, op. 299, Book II; Kuhlan's sonatas; studies from Bach, Brahms, Weber; also Mozart's easier sonatas.

Fifth Grade. Matthews' Graded Course, Books VII and VIII; Czerny's Etude de la Velocite, op. 299, Books III and IV; Cramer's Fifty Selected Studies, Books I and II; the more difficult of Mozart's sonatas and the easier of Beethoven's sonatas; compositions from Chopin, Schuman, Schubert and others.

Sixth Grade. Matthews' Graded Course, Books IX and X; Clemente's Gradus and Parnassum; the more difficult sonatas of Beethoven; composition from Chopin, Taussig, Rubenstein and others.

Special courses on all brass and reed instruments may also be arranged.

Each student who is pursuing a course in music will be assigned one or more periods daily; these assignments will be made in such a manner that neither instruction nor practice on the piano will conflict with the student's other academic interests.

Instruction may be begun at any time by such students as bring the director of music a receipt showing that they have met all the requirements explained above, to the full satisfaction of the college authorities.

THE SCHOOL OF MEDICINE

FACULTY OF PHYSIC

J. M. H. ROWLAND, M. D., Dean

RANDOLPH WINSLOW, A. M., M. D., LL. D.

L. E. NEALE, M. D., LL. D.

JOHN C. HEMMETER, M. D., Ph. D., Sc. D., LL. D.

ARTHUR M. SHIPLEY, M. D.

SAMUEL K. MERRICK, M. D.

GORDON WILSON, M. D.

WILLIAM F. LOCKWOOD, M. D.

GEORGE W. DOBBIN, A. B., M. D.

WILLIAM ROYAL STOKES, M. D., Sc. D.

HARRY FRIEDENWALD, A. B., M. D.

ARCHIBALD C. HARRISON, M. D.

CARY B. GAMBLE, Jr., A. M., M. D.

WILLIAM S. GARDNER, M. D.

STANDISH McCLEARY, M. D.

JULIUS FRIEDENWALD, A. M., M. D.

HIRAM WOODS, A. M., M. D.

ALEXIUS McGLANNAN, A. M., M. D.

FRANK MARTIN, M. D.

CALENDAR

1920-1921

June 1 to September 30.—Daily Clinics at University, Mercy and Maryland General Hospitals.

September 22.—Examination of Conditioned Students and Examination for Advanced Standing.

October 1.—Regular Session begins.

November 25.—Thanksgiving Recess begins. 6 p. m.

November 29.—Thanksgiving Recess ends. 9 a. m.

December 23.—Christmas Recess begins. 6 p. m.

January 3.—Christmas Recess ends.—9 a. m.

February 22.—Washington's Birthday.

March 24.—Easter Recess begins. 6 p. m.

March 29.—Easter Recess ends. 9 a. m.

June 1.—Commencement.

The School of Medicine of the University of Maryland is one of the oldest foundations for medical education in America, ranking fifth in point of age among the medical colleges of the United States. In the school building at Lombard and Greene streets in Baltimore was founded one of the first medical libraries and the first medical college library in America.

There for the first time in America dissecting was made a compulsory part of the curriculum; there instruction in Dentistry was first given (1837), and there were first installed independent chairs for the teaching of diseases of women and children (1867), and of eye and ear diseases (1873).

This School of Medicine was one of the first to provide for adequate clinical instruction by the erection in 1823 of its own hospital, and in this hospital intra-mural residency for senior students first was established.

Clinical Facilities

The University Hospital, property of the University, is the oldest institution for the care of the sick in Maryland. It was opened in September, 1823, and at that time consisted of four wards, one of which was reserved for eye cases. Additions were made to this building from time to time, but the demands on it became so great that a complete new building was erected. The hospital now is one of the finest owned and controlled by any medical school in the country. It is equipped with all modern conveniences and requirements for care of the sick and for clinical instruction of students of the University.

Besides its own hospital, the Medical School has control of the clinical facilities of the Mercy Hospital, in which were treated last year more than 30,000 persons, the Maryland General Hospital, the Maternity hospital of the University, the Maryland Lying-In Hospital, Maryland Lying-In Asylum, the West End Maternity.

In connection with the University Hospital an out-door obstetrical clinic is conducted. During the past year 1,798 cases were treated in the lying-in hospitals connected with the University.

Dispensaries and Laboratories

Three dispensaries associated with the University Hospital, Mercy Hospital, and Maryland General Hospital are organized on a uniform plan in order that teaching may be the same in all. Each dispensary has departments of Medicine, Surgery, Children, Eye and Ear, Genito-Urinary, Gynecology, Gastro-Enterology, Neurology, Orthopedics, Protology, Dermatology, Throat and Nose, and Tuberculosis. All students in their junior year work one day of each week in one of these dispensaries; all students in the senior year work one hour each day. About 46,000 cases treated last year give an idea of the value of these dispensaries for clinical teaching.

Laboratories conducted by the University purely for medical purposes are the Anatomical, Chemical, Experimental Physiology, Physiological Chemistry, Histology and Embryology, Pathology and Bacteriology, Clinical Pathology.

Prizes and Scholarships

To stimulate study among the candidates for graduation the Faculty of the School of Medicine offers a gold medal to the candidate who passes the best general examination. Certificates of Honor are awarded to the five candidates standing next highest.

A prize of $50 is given each year by Mrs. Jose L. Hirsch as a memorial to the late Jose L. Hirsch, formerly Professor of Pathology in this School, to the student in the third year who has done the most satisfactory work in Pathology.

The Dr. Samuel Leon Frank Scholarship was established by Mrs. Bertha Frank as a memorial of the late Dr. Samuel Leon Frank, an alumnus of the University, and entitles the holder to exemption from payment of the tuition fee for the year. It is awarded each year upon nomination of the Faculty "to a medical student who, in the judgment of the said Faculty, is of good character and in need of pecuniary assistance to continue his fedical course."

From a bequest to the School of Medicine by the late Charles M. Hitchcock, M. D., an alumnus of the University, two scholarships have been established which entitle the holders to exemption from payment of tuition fees for the year.

These scholarships are awarded annually by the Faculty of Physic to students who have meritoriously completed the work of at least the first year of the curriculum in medicine, and who present to the Faculty satisfactory evidence of good moral character and of inability to continue the course without pecuniary assistance.

The Randolph Winslow Scholarship, established by Prof. Randolph Winslow, M. D., LL. D., entitles the holder to exemption from the payment of the tuition fee of that year.

It is awarded annually by the Trustees of the Endowment Fund of the University, upon nomination of the Faculty of Physic, to "a needy student of the senior, junior or sophomore class of the Medical School. He must have maintained an average grade of 85 per cent. in all his work up to the time of awarding the scholarship. He must be a person of good character and must satisfy the Faculty of Physic that he is worthy of and in need of assistance."

The University Scholarship entitles the holder to exemption from payment of the tuition fee of the year and is awarded annually by the Faculty of Physic to a student of the senior class who presents to the Faculty satisfactory evidence that he is of good moral character and is worthy of and in need of assistance to complete his work.

The St. John's College Scholarship is awarded annually by the Faculty of Physic upon the nomination of the president of St. John's College, of Annapolis, Md.

It entitles the holder to exemption from the payment of the tuition fee of that year.

The Frederica Gehrmann Scholarship was established by bequest of the late Mrs. Frederica Gehrmann and entitles the holder to exemption from payment of tuition fees. This scholarship is awarded to a second-year student who at the end of the year passes the best practical examination in Anatomy, Physiology, Physiological Chemistry and Pharmacology. This examination is competitive.

REQUIREMENTS FOR ENTRANCE

Admission to the curriculum in medicine is by a completed Medical Student Certificate issued by the State Department of Education of Maryland. This certificate is obtained from the Department of Education on the basis of satisfactory credentials, or by examination and credentials, and is essential for admission to any class.

The requirements for the issuance of the Medical Student Certificate are:

(a) The completion of a standard four-year high school course or the equivalent, and in addition,

(b) Two years, sixty semester, or ninety trimester hours, of college credits, including chemistry, biology, physics and English.

Women are admitted to the Medical School of this University.

(A) Details of the High School Requirement

1. Graduation from an accredited high school after pursuing a four-year course based upon an eight-year elementary course or its full equivalent; or

2. Successfully passing entrance examinations in the following subjects:

(a) Required Eleven (11) Units

	Units
English 4 years	3
Elementary and Intermediate Algebra	1
Plane Geometry (first five books)	1
Two years of a foreign language	2
Two of the three sciences—Biology, Chemistry, Physics	2
American History and Civics	1
Ancient History or English History	1

(b) Electives, Four (4) Units

(1) History and Political Science:	
Ancient History or English History	1
Mediæval and Modern History	1 or ½
General History	1 or ½
Civics	½
Economics	½
(2) Language:	
French 2 years	2
German 2 years	2
Greek 2 years	2
Hebrew 2 years	2
Italian 2 years	2
Latin 1 or 2 years	1 or 2
Spanish 2 years	2
(3) Mathematics:	
Advanced Arithmetic	½
Advanced Algebra	1
Plane Trigonometry	½
Solid Geometry	½
(4) Science:	
Physics, Biology or Chemistry	1
Physical Geography and Geology	1
Astronomy	½
Physiology and Hygiene	½
(5) Vocational and cultural subjects:	
Agriculture	1
Bookkeeping	1
Commercial Geography	½
Domestic Science	1
Drawing { Mechanical 1 and 2	½ each
Drawing { Freehand 1 and 2	½ each
Manual Training	1
Music	1
Stenography	1 or 2

One unit in any subject is the equivalent of work in that subject for five periods per week for a year of at least thirty-six weeks, periods to be not less than forty-five minutes in length. One unit is equivalent to 2 semester credits or 2 points.

(B) Details of the College Requirement

a. The preliminary college curriculum shall extend through two college sessions of at least thirty-two weeks each of actual instruction, including final examinations.

b. In excellence of teaching and in content, the work of this preliminary college curriculum shall be equal to the work done in the freshman and sophomore years in standard colleges and universities.

c. This preliminary college work shall include courses in physics, chemistry, biology and English, each course to embrace at least six, eight or twelve hours of work in each subject, as shown in the schedule following.

SCHEDULE OF SUBJECTS OF THE TWO-YEAR PRE-MEDICAL COLLEGE COURSE

Sixty Semester or Ninety Trimester Hours Required

	Semester Hours
REQUIRED COURSES:	
Chemistry (a)	12
Physics (b)	8
Biology (c)	8
English Composition and Literature (d)	6

COURSES STRONGLY URGED:

A modern foreign language
Comparative vertebrate anatomy
Psychology
Social science

A semester hour is the credit value of sixteen weeks' work consisting of one lecture or recitation period per week, each period to be of not less than fifty minutes' duration net, at least two hours of laboratory work to be considered as the equivalent of one lecture or recitation period. A trimester hour is the same work pursued over a period of twelve weeks.

(a) CHEMISTRY. Twelve semester or eighteen trimester hours required, of which at least eight semester hours must be in general inorganic chemistry, including four semester hours of laboratory work. In the interpretation of this rule, work in qualitative analysis may be counted as general inorganic chemistry. The remaining four semester or six trimester hours required shall consist of work in organic chemistry.

(b) PHYSICS. Eight semester or twelve trimester hours required, of which at least two or three must be laboratory work. This course presupposes a knowledge of plane trigonometry.

(c) BIOLOGY. Eight semester or twelve trimester hours required, of which four or six must be laboratory work. This requirement may be satisfied by a course of eight semester or twelve trimester hours in either general biology or zoology, or by courses of four semester or six trimester hours each in zoology and botany, but not by botany alone. The requirement may be satisfied by six semester hours of college biology, including three semester hours in laboratory work, if preceded by a year (1 unit) of high school biology.

(d) ENGLISH COMPOSITION AND LITERATURE. The usual introductory college course of six semester or nine trimester hours, or its equivalent, is required.

Fees and Expenses

Following are the fees for students in the Medical School:

Matriculation fee (to be paid each year)	$ 5
Tuition fee (each year)	200

Estimated living expenses for students in Baltimore:

Items	*Low*	*Average*	*Liberal*
Books	$ 27	$ 48	$ 75
College Incidentals	20	20	20
Board, eight months	200	250	275
Room rent	64	80	100
Clothing and washing	50	80	150
All other expenses	25	50	75
*Total	$386	$528	$695

*Students take the pre-medical work at College Park, for which there is no charge for tuition and for which other expenses are detailed in the first part of the catalogue.

The special bulletin of the School of Medicine may be obtained by addressing Dean J. M. H. ROWLAND, University of Maryland School of Medicine, Baltimore, Md., or The President, University of Maryland, College Park, Md.

THE LAW SCHOOL

FACULTY

HENRY D. HARLAN, A. M.; L.L. B., Dean
HENRY STOCKBRIDGE, A. M.; L.L. B.
JOHN C. ROSE, L.L. D.
ALFRED S. NILES, A. M.; L.L. B.
RANDOLPH BARTON, Jr., A. B.; L.L. B.
EDWIN T. DICKERSON, A. M.; L.L. B., Secretary

The calendar for the opening of school and for holidays is the same as for the School of Medicine.

While the first faculty of law of the University of Maryland was chosen in 1813, and published in 1817 "A Course of Legal Study addressed to Students and the Profession Generally," which the *North American Review* pronounced to be "by far the most perfect system for the study of law which has ever been offered to the public," and which recommended a course of study so comprehensive as to require for its completion six or seven years, no regular school of instruction in law was opened until 1823. This was suspended in 1836 for lack of proper pecuniary support. In 1869 the Law School was organized, and in 1870 regular instruction therein was again begun. From time to time the course has been made more comprehensive and the Board of Instructors increased in number. Its graduates now number more than two thousand, and included among them are a large proportion of the leaders of the Bench and Bar of the State and many who have attained prominence in the profession elsewhere.

The Law School building adjoins the Medical School and part of its equipment is a large library, maintained for the use of the students, which contains carefully selected text-books on the various subjects embraced in the curriculum. No fee is charged for the use of the library. Other libraries also are available for students.

Courses of Instruction

The courses of instruction in the Law School extend through three scholastic years of thirty-two weeks each, with an average of at least ten hours of class-room work each week, and aim to present a general and complete view of the science of law, with reference not only to its growth by judicial exposition, but also to the principles which have been engrafted upon it by positive enactment. The course of study embraces

both the theory and the practice of the law, and is designed thoroughly to equip the student for the practice of his profession, when he attains the Bar.

Scientific education is afforded in the principles of the Common Law, Equity, the Statutory Law of the State of Maryland and the Public Law of the United States.

Instruction is given by discussion of assigned cases and by lectures. The system of instruction embraces the study of assigned cases and of approved text-books. It is believed that instruction given through the use of cases alone is unnecessarily laborious, not conducive to uniformity, and likely to produce confusion in the students's mind unless supplemented by the aid of proper text-books. Accordingly a system of instruction, involving the use of both cases and text-books, is followed.

Students desiring to do so, may take elective or special courses. Such students are not candidates for the degree of Bachelor of Laws, but will receive certificates of proficiency in the branches pursued. Courses of instruction will be arranged with special reference to those desiring to obtain a knowledge of certain branches of the law, as an aid in business, or in the management of estates.

The Law School endeavors to uphold a high standard of legal education and it aims to give the student a comprehensive view of the whole field of the Law and particularly a knowledge of the fundamentals of American Law, in order to enable him to pass the examination for the Bar, if he has chosen the legal profession for his life work, or to fit him to care properly for his business interests, if he desires legal education merely as the accomplishment of the well-equipped man of business or man of culture.

The lectures are intended to present all the leading principles of the common law applicable to the subject, and the modification of the common law by statute, and to give illustrations of the application of the common and statute law. Special attention is given to the statutes in force in Maryland, and to peculiarities of the law in that State, where there are such; but the reasons for these statutory modifications and local peculiarities are explained so that the student may in a short time acquaint himself with the local peculiarities of the law in any State in which he may practice.

Readings from text-books and adjudicated cases are assigned on the subjects treated of in the lectures.

It will be seen that the full course of study extends over three years and as the Faculty is satisfied that students, who have not made considerable progress in the law before entering the Law School, would do

themselves and the School an injury by attempting to graduate in a shorter period, no student will be permitted to receive the degree of LL. B. until after three full years of study at this school, unless admitted to advanced standing.

Requirements for Admission

Applicants for admission to the Law School must be at least eighteen years of age, must present evidence of good moral character and if candidates for the degree of Bachelor of Laws, will be required to give to the study of the law three scholastic years of at least thirty-two weeks each, with an average of at least ten hours' class-room work each week, and to have completed at the time of admission to the School a four years' high school curriculum or such a course of preparation as would be required for admission to the principal colleges and universities in Maryland; but persons who are unable to comply with these entrance requirements or to spend three years in the study of law may be received as special students, not candidates for the degree, and upon completing the whole or any part of the course, may receive certificates of proficiency in the work completed, according to standards to be fixed.

The Faculty will consider that students are properly qualified for entrance as candidates for the degree of Bachelor of Laws who have received a bachelor's degree from any reputable college or university, or certificate of graduation from any of the Normal of high schools of the State of Maryland, or other reputable institution of a similar character, or have certificates showing that they have passed the entrance examinations to one of the principal colleges or universities in Maryland or a college or university maintaining a standard equal thereto. In the absence of such degree or certificate, a candidate for the degree of LL. B. must file with the secretary, at the time of matriculation, a certificate from the Clerk of the Court of Appeals of Maryland, showing that he has been registered as a law student, as provided by Chapter 426 of the Acts of the General Assembly of Maryland, passed at the Session of 1918.

Advanced Standing

Students may be admitted to advanced standing in the Senior or Intermediate classes upon satisfying the requirements for the work of the preceding year or years. These requirements may be met by presenting a certificate from any law school of accredited standing showing that the student has successfully completed equivalent courses in a law school, covering at least as many hours as are required for such subjects in this school. No credit will be given for study pursued in a law office.

Graduation

The Law School confers the degree of Bachelor of Laws on students who have attended the course of lectures for three years, have attained the required standard in examinations, and in the Practice Court, and have submitted to the Faculty a satisfactory thesis.

Fees and Expenses

The fees for each term are payable in advance at the commencement of each term, and tickets of admission to the lectures are issued only on payment of fees.

The charges for instruction are as follows:

For term of four months	$ 50
For session of eight months	100

Special students will be charged according to the courses pursued.

There will be a matriculation fee of ten dollars charged and payable for each student at the time of matriculation and an additional charge of ten dollars to each graduate as a diploma fee.

Special arrangements may be made by members of the Bar, or others, not regular students of the Law School, for attending any particular part or branch of instruction at rates of charges in proportion to the above.

General living expenses of students are the same as outlined for the Medical School.

A special bulletin of The Law School may be obtained by addressing HENRY D. HARLAN, *Dean*, University of Maryland Law School, Baltimore, Md., or The President, University of Maryland, College Park, Md.

THE SCHOOL OF DENTISTRY

FACULTY

T. O. HEATWOLE, M. D., D.D. S., Dean

E. FRANK KELLY, Phar. D.

ELDRIDGE BASKIN, M. D., D.D. S.

ALEX H. PATERSON, D.D. S.

J. BEN ROBINSON, D.D. S.

B. MERRILL HOPKINSON, A. M., M. D., D.D. S.

ROBERT P. BAY, M. D.

ROBERT L. MITCHELL, Phar. G., M. D.

H. J. MALDEIS, M. D.

HORACE M. DAVIS, D.D. S.

The calendar for the School of Dentistry is the same as for the School of Medicine, except that the clinics are held in the Dental Infirmary of this School.

The course of instruction in the School of Dentistry covers a period of four Sessions of 32 weeks each, exclusive of holidays, in separate years.

The thirty-eighth regular session will begin October 1, 1920, and continue until about May 25, 1921. Full attendance during this period is demanded in order to get advancement to higher classes. Class examinations for the session will be held in October, January and May.

This department of the University is a member, in good standing, of the National Association of Dental Faculties, and conforms to all the rules and regulations of that body.

Aside from and independent of the regular session, this School maintains a spring and summer session, which follows immediately the termination of each regular session and continues until October 1st. This is intended for practical work only; no credit for time thus put in is allowed toward graduation. The many advantages of the spring and summer session for actual practice cannot be overestimated, as the number of patients applying for dental services is always very large and the Infirmary is never closed except on Sundays and holidays.

Requirements for Matriculation

The requirements for matriculation in the School of Dentistry are those established by the Dental Educational Council of America, viz: graduation from an accredited high school having a four-year course, or its equivalent.

Applicants for matriculation must submit their credentials for verification to the *State Department of Education, Baltimore, Maryland.*

Applicants lacking full credentials may earn same by taking a stated written examination on subjects in which they are deficient.

Attendance Requirements

In order to receive credit for a full session, each student must have entered and be in attendance not later than ten days after the beginning and remain until the close of the regular session.

In case of sickness, attested by a physician's certificate, students may enter twenty days after the opening of the regular session.

Graduates from reputable and accredited medical colleges are admitted to the Sophomore year and credits allowed on all subjects completed which are included in the Dental Course.

Students from other recognized dental colleges will be given credit for all work completed in the institution from which they come, except those entering for the Senior year only. These will be required to take the work of the full Senior courses of this School.

At the close of each session, each student must pass a satisfactory examination on the several subjects of that year before he can be entered in the succeeding grade.

The candidate for graduation must have attended four sessions of instruction in some recognized dental college, the last year of which must have been in this institution.

He must have satisfied the requirements of each of the several instructors and proved himself proficient in the theory and practice of Dentistry.

He must have attained the age of twenty-one years and be of good moral character.

Matriculation and Fees

Students may matriculate by mail by sending money order, or registered letter containing the amount of fee, $5.00, to Dr. T. O. Heatwole, *Dean,* corner Greene and Lombard streets, Baltimore, Md.

The fees (with the exception of the Diploma fee), must be paid as follows: One-half on the entrance day, and the balance during the first week of the succeeding February.

Matriculation (paid once only), $5.00. Tuition fee, $150.00. Diploma fee, $30.00. Dissecting fee (paid once only), $15.00. Laboratory fee, $5.00.

The Diploma fee must be paid by the first of April of the year of graduation.

A special ticket is issued at the close of each session to every student of the first, second and third year classes, as an evidence that he has been successful, or unsuccessful, in examinations for advancement to a higher grade, and also has attended a full session.

Special bulletin of the School of Dentistry may be obtained by addressing Dean T. O. HEATWOLE, University of Maryland School of Dentistry, Baltimore, Md., or The President, University of Maryland, College Park, Md.

THE SCHOOL OF PHARMACY

FACULTY

E. F. KELLY, Phar. D., Dean

DAVID M. R. CULBRETH, A. M., Phar. G., M. D.

HENRY P. HYNSON, Ph. D.

CHARLES C. PLITT, Phar. G.

LOUIS J. BURGER, Phar. D., LL. B.

H. J. MALDEIS, M. D.

DANIEL BASE, Ph. D.

J. CARLTON WOLF, Phar. D.

ROBERT L. MITCHELL, Phar. D., M. D.

H. E. WICH, Phar. D.

GEORGE A. STALL, Phar. D.

The calendar is the same as for the School of Medicine, except for the statement in the latter about clinics.

The School of Pharmacy was organized in 1841, largely at the instance of members of the Faculty of Medicine, and, for a time, the lectures were delivered at the Medical School. Later it became separated and continued an independent organization until, as the Maryland College of Pharmacy, it finally became an actual part of the University. With but one short intermission, previous to 1865, it has continuously exercised its functions as a teaching school of pharmacy.

Reference to its records shows it to have been among the first, in every instance, to adopt advanced methods, and the standards it has always set and maintained have equalled the highest. It was the first school of pharmacy to employ separate professors for all branches taught; it is the pioneer in establishing laboratories for practical teaching and exercise, it took the initiative in providing adequate buildings for advanced teaching; it was among those which early added plant histology, pharmacognosy, volumetric analysis and alkaloidal assay as distinct branches, and the first to add a separate chair of commercial pharmacy and dispensing, whereby students may be given better and larger experimental knowledge of the actual practice of pharmacy than can be obtained at the average drug store.

Equipment and Degrees

The School of Pharmacy has at its disposal for laboratory instruction and lectures several large and well-equipped halls in the University buildings in Baltimore. From the beginning the chief aim of the School has been to prepare its students for the intelligent practice of pharmacy in the modern drug store.

In doing this, it takes into consideration that there exist three distinct divisions of the profession—preparation, collection and dispensing, which is the manufacturer, jobber and retailer—and that all need to be scientifically taught. The School has so arranged its curriculum as to give a well-ordered foundation for a pharmaceutical specialist in two years. Upon completion of this two-year curriculum, the student is graduated with the degree Graduate in Pharmacy, Ph. G. Students who continue their studies for one year after completion of the basic two years' work will receive the degree of Pharmaceutical Chemist, Ph. C.

The School of Pharmacy holds membership in the American Conference of Pharmaceutical Faculties and is registered in the New York Department of Education, and all other states which maintain registration bureaus. The American Conference of Pharmaceutical Faculties is organized to promote pharmaceutical education, and all schools holding membership in it are required to maintain certain standards for entrance and graduation.

Requirements for Admission

The applicant must be not less than seventeen years old and must have completed a four-year standard high school curriculum, or its equivalent. The course, or its equivalent, must have included one year of Latin. Two years of Latin, however, are more desirable.

Admission to the curriculum in pharmacy is by certificate issued by the State Department of Education, Baltimore, Md. The certificate is issued on the basis of credentials, or by examination, or both. Evaluation of credentials can be made by the Department of Education only, and all applicants, whether their entrance qualifications are clearly satisfactory as per the requirements for matriculation outlined above, or not, must secure a certificate from said Department of Education to be presented to the Dean before they will be allowed to matriculate.

Applicants should secure a Census Blank from the Credential Clerk of the Department of Education, or from the Dean of this School, properly fill it out and return it at the earliest possible date, together with the fee of two dollars (Money Order). Diplomas or certificates need not be sent. The Department of Education will secure all credentials desired after the Census Blank has been received. The applicant will be notified of the result of the investigation; if his preparation is sufficient, he will be granted a certificate of entrance.

This certificate, carrying the approval of the State Department of Education, will receive recognition by authorities of other states.

Applicants, whose credentials do not meet the requirements, must stand an examination in appropriate subjects to make up the required number of units. The fee for such examination is one dollar per subject; five dollars for the entire number of subjects.

Credit will be given for first-year subjects to students only coming from schools of pharmacy holding membership in the American Conference of Pharmaceutical Faculties, provided they present a proper certificate of the satisfactory completion of such courses, and meet the entrance requirements of this School.

Requirements for Graduation

1. The candidate must possess a good moral character, and must be twenty years old.

2. He or she must have attended two sessions at a school of pharmacy, the last *in all instances*, at this school. Credit will be given only for first-year subjects which have been successfully completed in a school or college holding membership in the American Conference of Pharmaceutical Faculties. The student also must have had four years of high school work.

3. He or she must have passed an examination in all lecture and laboratory instruction.

4. On or before May 1st the candidate must present the graduation fee and a letter from his or her parents or some authorized person certifying to his or her age.

Fees and Expenses

Matriculation fee	$ 5
For full first year	110
For full second year	115
Graduation fee	15
Deposit to cover breakage	5

If the student desires to remain in school for the third year to obtain the degree of Pharmaceutical Chemist the tuition will be $125.

Living expenses are practically the same as those detailed for students of the Medical School.

The special bulletin of the School of Pharmacy may be obtained by addressing E. F. KELLY, *Dean*, University of Maryland School of Pharmacy, Baltimore, Md., or The President, University of Maryland, College Park, Md.

SCHOOL OF EDUCATION

The School of Education consists of an organization of the various activities of the University which are concerned with the professional preparation of teachers. Its courses are planned to serve three classes of students: First, those preparing to teach agriculture, home economics, industrial and general subjects in secondary schools; second, prospective principals of high schools, educational supervisors, county agents, home demonstrators, boys' and girls' club workers, and other extension workers; third, those majoring in other lines of work who desire courses in education and psychology for their professional and informational value.

CURRICULA

Two general classes of curricula leading to the degrees of Bachelor of Science and Bachelor of Arts are offered.

The first of these provides fixed courses permitting comparatively little election for the definite purpose of preparing teachers and supervisors of agriculture, home economics, manual training, and industrial subjects.

The second class provides a wide range of electives and seeks to train superintendents, principals and teachers of general high school subjects. Although there are definite and fixed basic requirements, the student may choose from a number of subjects the major subject in which he expects to qualify for teaching. Correlated with this may be other subjects which he may wish to teach.

All students wishing to prepare for teaching should consult the Dean of the School of Education regarding the arrangement of their work. Upon matriculation each student is required to state his major interest and in the election of courses to secure the advice and approval of the head of the department in which his major falls. The previous training of the student, his experience, and his future needs govern the head of the department in his recommendations.

TEACHERS' SPECIAL DIPLOMAS

The degrees granted for work done in the School of Education indicate primarily the quantity of work completed. Teachers' special diplomas certify to the professional character of such work. Teachers' special diplomas will be granted only to those who, besides qualifying for a degree, give promise of superior professional ability as evidenced by their personality, character, experience, and success in supervised teach-

ing. Teachers' special diplomas will be granted in agricultural education, home economics education, manual training, industrial education, and in general education.

The recipient of a teacher's special diploma is eligible for certification by the State Superintendent of Schools without examination.

SPECIAL COURSES

By special arrangement courses in education are offered evenings and on Saturdays to teachers in service and to those who may qualify for teaching in the schools of Maryland after having had such work. College credit will be granted for this work if taken in course. Only a limited amount of service of this character can be undertaken by the faculty of the School of Education in any year. School officials should make application for this work before arranging for it in their counties.

As the need for evening classes in industrial and home economics education arises, special courses will be offered at centers throughout the State. The number and location of these centers will depend entirely upon the need and demand for such instruction. The courses will be organized on the short unit basis and will be maintained only as long as the demand justifies it. Upon the satisfactory completion of such special curricula, students will be issued certificates of proficiency.

In summer special courses are offered for the benefit of teachers in service and such individuals as may be able to qualify for teaching upon the completion of the work.

GENERAL EDUCATION.

Since the student electing this curriculum may become a candidate for either the Bachelor of Arts or the Bachelor of Science degree, he should upon his matriculation state the degree for which he wishes to qualify. Students wishing to prepare for the teaching of English, history, the social sciences, and language should become candidates for the degree of Bachelor of Arts. Those wishing to teach general and biological sciences, chemistry, and physics should become candidates for the degree of Bachelor of Science.

Students should also state the subjects in which they expect to qualify for teaching, designating a major and a minor interest; they should complete approximately sixty-three hours in their major and related subjects and twenty-seven hours in their minor and related subjects.

Candidates for the Bachelor of Arts degree must complete, in addition to the requirements of the curriculum, a minimum of eighteen credit hours of science, at least nine of which must be in biology; and must

have completed a minimum of thirty-six credits in foreign language. Candidates for the Bachelor of Science degree must complete, in addition to the requirements of the curriculum, nine hours of history and nine hours of language.

Students electing this curriculum must register either in the School of Liberal Arts, Education, Chemistry, or College of Agriculture. In any case they must register with the School of Education for the special teacher's diploma.

GENERAL EDUCATION.

FRESHMAN YEAR. Term:	I	II	III
Composition and Rhetoric (Eng. 101-103)	3	3	3
Language (Spanish, French, German, Italian, Latin or Greek)	3	3	3
Educational Guidance (Ed. 101-103)	1	1	1
Public Speaking (Pub. Spk. 101-103)	1	1	1
Library Science (Lib. Sci. 101)	1		
Military or Physical Education	2	2	2
AND TWO OF THE FOLLOWING GROUPS:			
GROUP I—			
General Chemistry (Gen'l Chem. 101-102)	4	4	
Qualitative Analysis (Gen'l Chem. 103)			4
GROUP II—			
General Zoology (Zool. 101-102)	3	3	
General Botany (Bot. 101)			4
GROUP III—			
American Colonial History (H. 104)	2		
Civil War and Reconstruction (H. 105)		2	
Development of American Nationality (H. 106)			2
Current History (H. 101-102)		1	1
GROUP IV—			
Mathematics (Math. 106-108)	3	3	3

SOPHOMORE YEAR.			
Public Education in the U. S. (Ed. 101)	2		
General Applied Psychology (Psy. 101-102)		2	2
Technical Composition (Eng. 104-106)	2	2	2
Major	5	5	5
Minor	2	2	2
Military or Physical Education	2	2	2
Electives	5–7	5–7	5–7

JUNIOR YEAR.			
Educational Psychology (Ed. 102)	5		
Survey of Teaching Methods (Ed. 103)		5	
Education 104 or 105			5
Principles of Economics (Econ. 101-102)	3	3	
Public Finance (Econ. 106)			3
Major	5	5	5
Minor	2	2	2
Electives	2–3	2–3	2–3

SENIOR YEAR. Term:	I	II	III
Principles of Secondary Education (Ed. 107)	3		
*Supervised Teaching of General Subjects (Ed. 106)			
Major	5	5	5
Electives	8–10	8–10	8–10

*Given any term. Credit not to exceed five hours.

Requirements for a Degree.

Upon the satisfactory completion of two hundred and four trimester hours, under the restrictions and requirements prescribed above, the student will be recommended for the degree of Bachelor of Arts or for the degree of Bachelor of Science, depending upon the character of the work elected.

AGRICULTURAL EDUCATION

In addition to the regular entrance requirements of the University, involving graduation from a standard four-year high school, students electing the agricultural education curriculum must present evidence of having acquired adequate farm experience after reaching the age of fourteen years.

The electives allowed by this curriculum may be selected from any of the courses offered by the University for which the student has the necessary prerequisites.

A student is expected, however, to confine his elections to subjects related to farming and to teaching. Though opportunity is afforded for specialization in a particular field of agriculture, such as animal husbandry, agronomy, pomology, vegetable gardening and farm management, students should arrange their work so that at least forty per cent of their time will have been spent on technical agriculture, twenty-five per cent on scientific subjects, twenty per cent on subjects of a general educational character and from twelve to fifteen per cent on subjects in professional education.

Students electing this curriculum must register either in the College of Agriculture or the School of Education. In either case they must register with the School of Education for the special teacher's diploma.

AGRICULTURAL EDUCATION.

FRESHMAN YEAR.

Cereal Crops (Agron. 101)	4		
Animal Husbandry (An. Hus. 101)		4	
Elementary Vegetable Gardening (Hort. 101)			4
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
General Zoology (Zool. 101-102)	3	3	
General Botany (Bot. 101)			4
Composition and Rhetoric (Eng. 101-103)	3	3	3
Public Speaking (Pub. Sp. 101-103)	1	1	1
Military	2	2	2
Educational Guidance (Ed. Guid. 101-103)	1	1	1

SOPHOMORE YEAR.

Public Education in the U. S. (Ed. 101)	2		
Elementary Pomology (Hort. 102)	4		
Grain Judging (Agron. 102)		1	
Forage Crops (Agron. 103)			4
Principles of Dairying (D. H. 101)	3		
Dairy Production (D. H. 102)		3	
Plant Physiology (Plt. Psy. 101-102)		3	3
Soils (Soils 101-102)		3	3
Geology (Geol. 101)	3		
General and Applied Psychology (Psy. 101-102)		2	2
Military	2	2	2
Electives	4–6	4–6	4–6

JUNIOR YEAR.

Educational Psychology (Ed. 102)	5		
Survey of Teaching Methods (Ed. 103)		5	
Methods in Secondary Vocational Ag'l (Ag. Ed. 101)			5
Feeds and Feeding (An. Hb. 102)	4		
Farm Poultry (An. Hb. 104)			3
Tech. Writing and Scientific Thought (Eng. 104-106)	2	2	2
Social Science	3	3	
Electives	4–6	6–8	6–8

SENIOR YEAR.

Problems in Agricultural Education (Ag. Ed. 102-104)	1	1	1
The Rural Community and Its Education (Ag. Ed. 106)		3	
Principles of Secondary Education (Ed. 107)	3		
*Supervised Teaching of Ag'l Subjects (Ag. Ed. 105)			
Farm Management	3	3	
Electives	10–12	10–12	15–17

*Given any term. Credit not to exceed five hours.

Requirements for a Degree

Upon the satisfactory completion of two hundred and four trimester hours under the restrictions and requirements prescribed above, a student will be recommended for the degree of Bachelor of Science.

HOME ECONOMICS EDUCATION

In addition to the regular entrance requirement of the University, involving graduation from a standard four-year high school, students electing home economics education must present evidence of two years' experience in the home as a house daughter during which time a large share of the responsibility in the management of the home was assumed.

Students may elect from other schools such courses as they may be qualified to enter. They are expected, however, to confine their elections primarily to subjects related to home making and teaching. The curriculum should be so arranged that approximately forty per cent. of the

student's time will be spent on technical home economics subjects, twenty-five per cent on subjects of general academic character and from twelve to fifteen per cent on subjects of a professional character.

Students electing this curriculum register in the School of Home Economics and with the School of Education for the special teacher's diploma.

HOME ECONOMICS EDUCATION.

FRESHMAN YEAR. Term:	I	II	III
*Garment Construction (Clothing 101)	2		
Drafting and Elementary Dress Design (Cloth. 102)	4		
Dressmaking (Cloth. 103)		3	
Textiles 101		1	
Foods 101			6
Composition and Design (Art 101)		2	
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
Composition and Rhetoric (Eng. 101-103)	3	3	3
Educational Guidance	1	1	1
Physical Education	2	2	2
Electives	2–4	2	2

*Students with high school training in Textiles and Clothing presenting satisfactory credentials are not required to take Clothing 101.

SOPHOMORE YEAR.			
Public Education in the U. S. (Ed. 101)	2		
General and Applied Psychology (Psy. 101-102)		2	2
Foods 102		4	
Costume Design (Art. 103)			3
Laundering (Textiles 102)	2		
Advanced Textiles (Textiles 103)	1		
Household Management (H. M. 101)			3
Organic Chemistry (Gen'l Chem. 112-113)	3	3	
Botany 101			4
Zoology 101-102	3	3	
Physical Education	1	1	1
Electives	4–6	3–5	3–5

JUNIOR YEAR.			
Educational Psychology (Ed. 102)	5		
Survey of Teaching Methods (Ed. 103)		5	
Methods in Secondary Voc. Home Ec. (H. E. Ed. 101)			5
Freehand Perspective (Art. 102)	2		
Home Architecture and Design (Art. 105)		2	
Household Management (H. M. 102)		3	
Home Management (H. M. 103)			5
Clothing 104	2		
Bacteriology 101-103	3	3	3
Physical Education	1	1	1
Electives	3–5	3–5	3–5

SENIOR YEAR.			
Problems in Home Econ. Edu. (H. E. Ed. 102-103-104)	1	1	1
†Supervised Teaching (H. E. Ed. 105)			
Physiological Chemistry (Bio-Chem. 101)	4		
Nutrition (Foods 105)		5	
Dietetics (Foods 106)			5
Child Care and Welfare (H. E. Ed. 109)			2
Electives	10–12	10–12	8–10

†Given any term. Credit not to exceed five hours.

Requirements for a Degree

Upon the satisfactory completion of two hundred and four trimester hours, under the restrictions and requirements prescribed above, a student will be recommended for the degree of Bachelor of Science.

INDUSTRIAL EDUCATION

Three types of curricula are offered in Industrial Education, viz., a four-year curriculum,, a two-year curriculum and a special curriculum. The first two are offered as resident work at the University and the third is offered at special centers in the State where occasion demands.

FOUR-YEAR CURRICULUM IN INDUSTRIAL EDUCATION FOR TEACHERS OF RELATED SUBJECTS

In addition to the regular entrance requirement of the University, involving graduation from a standard four-year high school, students electing the four-year curriculum in industrial education must be willing to engage in the trades or industries during the three summer vacations.

The electives allowed by this curriculum may be chosen from any of the courses offered in the University for which the student has the necessary prerequisites.

INDUSTRIAL EDUCATION.

(Four-year curriculum for teachers of related subjects.)

FRESMAN YEAR. Term:	I	II	III
Trigonometry or Solid Geometry (Math. 101 or 102)	5		
Analytics (Math. 103)		5	5
Freehand Drawing (Dr. 101)	1		
Mechanical Drawing (Dr. 102)	1	1	
Descriptive Geometry (Dr. 105)			3
Technical Instruction (M. E. 101)	1	1	
Woodwork (Shop 101)	1	2	1
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
Composition and Rhetoric (Eng. 101-103)	3	3	3
Educational Guidance (Prin. Ed. 101-103)	1	1	1
Military	2	2	2
Summer Work in Trade or Industry			

SOPHOMORE YEAR. Term:	I	II	III
Public Education in the U. S. (Ed. 101)	2		
General Psychology (Prin. Ed. 105-106)		2	2
Advanced Algebra (Math. 104)	3		
Calculus		3	3
Mechanics and Sound (Phys. 101 and Phys. Lab. 101)	5		
Elec. and Magnetism (Phys. 102 and Phys. Lab. 102)		5	
Heat and Light (Phys. 103 and Phys. Lab. 103)			5
Graphic Statics (Mech. 101)		3	
Descriptive Geometry (Dr. 106)	4		
Drafting (Dr. 108)			1
Steam Engines (M. E. 102)	3		
Technical Mechanics (M. E. 103)		2	
Analytical Mechanics (Mech. 102)			3
Blacksmithing (Shop 105)		2	
Foundry (Shop 108)			2
Machine Work (Shop 108)			1
Military	2	2	2
Summer Work in Trade or Industry			

JUNIOR YEAR.

Educational Psychology (Ed. 102)	5		
Survey of Teaching Methods (Ed. 103)		5	
Methods in Ind. Edu. for Secondary Schools (Ind. Ed. 101)			5
Elementary Machine Design (D. Des. 101)	2		
Machine Design (M. Des. 102-103)		3	4
Dynamos and Motors (E. E. 111-112)	2	2	
Electrical Engineering Lab. (El. Lab. 102-103)	1	1	
Experimental Engineering (Exp. Lab. 102)			1
Materials of Construction (Mech. 105)		2	
Hydraulics (Hyd. 101)			3
Machine Work (Shop 110)	3		
Oral and Technical English (P. S. 116-118)	1	1	1
Electives	3–6	3–6	3–6
Summer Work in Trade or Industry			

SENIOR YEAR.

Problems in Industrial Education (Ind. Ed. 102-104)	2	2	2
History of Industrial Education (Ind. Ed. 106)		3	
*Supervised Teaching in Ind. Education (Ind. Ed. 105)			
Principles of Secondary Education (Ed. 107)	3		
Social Sciences	3	3	3
Hydromechanics (Hyd. 103)	3		
Experimental Engineering (Exp. Lab. 104)	1	2	1
Primary and Secondary Batteries (E. E. 110)		2	
Heating and Ventilation (M. E. 106)			3
Lights and Illumination (E. E. 105)			3
Electives	5–8	5–8	5–8

*Given any term. Credit not to exceed five hours.

Requirements for a Degree.

Upon the satisfactory completion of two hundred and four trimester hours under the restrictions and requirements prescribed above, a student will be recommended for the degree of Bachelor of Science.

TWO-YEAR CURRICULUM IN INDUSTRIAL EDUCATION FOR TEACHERS OF RELATED SUBJECTS

This curriculum is designed for mature students who have had considerable experience in some trade or industry.

In addition to the above, applicants for admission to this curriculum must have as a minimum requirement an elementary school education or its equivalent and must be willing to engage in the trades and industries during the summer vacation.

The curriculum will not be rigidly required as laid down, but will be made flexible, in order that it may be adjusted to the needs of students who present advanced credits for certain of the required courses.

INDUSTRIAL EDUCATION.

(Two-year curriculum for teachers of related subjects.)

FIRST YEAR. Term:	I	II	III
Essentials of Methods		3	
Methods in Industrial Education (Ind. Ed. 101)			5
Mechanical Drawing (Dr. 2)	(6)	(6)	(6)*
Foundry (Shop 6)			6*
Power Plant Operation (M. E. 5)	(3)		
Carpentry (Shop 3)	(6)		
Technical Instruction (M. E. 3)	2	2	2
Elementary Physics (Phys. 1)	3(3)	3(3)	3(3)
Chemistry (Chem. 1)	2(3)	2(3)	
Composition (Eng. 2)	3	3	3
Electives			2–3
Summer Work in Trade or Industry			

*Alternative.

SECOND YEAR.			
Problems in Industrial Education (Ind. Ed. 102)	2	2	2
†Supervised Teaching in Indus. Education (Ind. Ed. 104)			
Direct Current (E. E. 1)	2(3)	2(3)	
Alternating Currents (E. E. 2)			4(3)
Technical Mechanics (M. E. 4)	2	2	4
Shop Mathematics (Shop 4)	1	1	
Plane Geometry (Math. 5)	3		
Plane Trigonometry (Math. 6)		3	
Applied Mathematics (Math. 7)			3
Electives	6–7	6–7	3–4

†Given any term. Credit not to exceed five hours.

Requirements for a Teacher's Special Diploma.

Upon the satisfactory completion of the curriculum as laid down, or its equivalent, under the restrictions and regulations presented above, the student who gives promise of superior professional ability will be recommended for a Teacher's Special Diploma.

SPECIAL COURSES FOR TEACHERS OF TRADE AND RELATED TRADE SUBJECTS

To meet the needs for industrial teacher training in Baltimore, two types of courses are offered of evenings in that city—one for teachers of trade subjects, the other for teachers of related trade subjects. The courses open about the last of September and close about the last of April. The class for teachers of trade subjects meets twice a week, the one for teachers of related trade subjects meets once a week. The recitation period in all cases is two hours.

Applicants for admission to these classes must have had considerable experience in the line of work they expect to teach, and must have, as a minimum requirement, an elementary school education or its equivalent. The credit allowed for these courses depends upon the amount and character of the work completed.

For teachers of trade subjects the term's work deals with the analysis and classification of trade knowledge for instructional purposes, the mechanics and technique of teaching, shop and class-room management, and the organization of industrial classes. The work for teachers of related subjects is similar to that described for teachers of trade subjects except that emphasis is placed upon the analysis of their specialties in relationship to the different trades with which they are articulated.

DESCRIPTION OF COURSES

Education

Ed. 101. Public Education in the U. S. Two credit hours. First term. Open to sophomores, juniors, and seniors. Required of sophomores in Education.

It is the purpose of this course to introduce the student to present day problems of education by means of a study of public education in the United States, with the emphasis on secondary education and its reorganization.

Ed. 102. Educational Psychology. Five credit hours. First term. Open to juniors and seniors. Required of Juniors in Education. Prerequisite, Psy. 101-102.

A study of instincts and their appearance, the psychology of learning; mental tests and measurements; individual differences; and the mental development and characteristics of children during the successive school ages.

Ed. 103. Survey of Teaching Methods. Five credit hours: Four lectures and one laboratory. Second term. Open to juniors and seniors. Required of juniors in Education. Prerequisite, Ed. 102.

A course dealing with the teaching process; the nature of objectives; the lesson plan; observation, critiques; teaching methods; type lessons; and motivation.

Ed. 104. Methods in Secondary English, History and the Languages. Five credit hours: four lectures and one laboratory. Third term. Open to juniors and seniors. Required of juniors in General Education who are candidates for the degree of Bachelor of Arts. Prerequisite, Ed. 103.

This course deals with the aims; content; sources of materials; analysis and arrangement of subject matter; psychology of the subjects; special methods; note book and other necessary auxiliary work.

Ed. 105. Methods in the Secondary School Sciences. Five credit hours: four lectures and one laboratory. Third term. Open to juniors and seniors. Required of juniors in General Education who are candidates for the degree of Bachelor of Science. Prerequisite, Ed. 103.

This course deals with the aims; content; sources of materials; analysis and arrangement of subject matter; psychology of the subjects; special methods; equipment and its proper use; note books and other necessary auxiliary work.

Ed. 106. Supervised Teaching of General Subjects. Credit not to exceed five hours, depending on the amount and character of work done. Given any term. Senior year.

Class teaching, conferences, lesson plans and critiques.

Ed. 107. Principles of Secondary Education. Three credit hours. First term. Open to seniors and to graduate students by special arrangement. Required of seniors in General, Agricultural and Industrial Education.

A study of the evolution of secondary education; the articulation of the secondary school with the elementary school, colleges, technical schools, the community and the home; the junior high school, programs of study and the reconstruction of curriculums; the teaching staff and student activities.

Ed. 108. Theory of Vocational Education. Three credit hours. Third term. Open to advanced undergraduate and graduate students by special arrangement.

A study of the development of vocational education; educational and social forces behind the movement; terminology; types of industrial schools; technical high schools, vocational education for girls; vocational education in rural communities; recent legislation.

Educational Guidance

Ed. Guid. 101-103. Educational Guidance. One credit hour each term. Freshmen year. Required of freshmen in Education.

This course is designed to assist freshmen students in Education in adjusting themselves to the demands and problems of college and professional life, and to guide them in the selection of college work during subsequent years. Among the topics discussed are the following: Student finances; student welfare; health; althletics; general reading; mental recreation; principal and methods of study; the use of the library; student organizations; student government; the purpose of the college; the election of courses and the selection of extra curriculum activities.

PSYCHOLOGY

Psy. 101-102. General and Applied Psychology. Two credit hours each term. Second and third terms. Open to sophomores, juniors and seniors. Required of sophomores in Education.

This course embraces a study of human life from the biological point of view; the nervous system; attention, interest, instincts; reflexes; habit, effort; personality; the psychology of efficiency; the application of psychology, to advertising, salesmanship, employment, and education.

AGRICULTURAL EDUCATION

Ag. Ed. 101. Methods in Secondary Vocational Agriculture. Five credit hours. Third term. Open to juniors and seniors. Required of juniors in Agricultural Education.

This course embraces a study of the purposes of secondary vocational agriculture; types of schools offering such instruction; vocational analysis; the arrangement of vocational information for instructional purposes; curriculums; daily programs; the farm job as the unit of instruction; the place of auxiliary knowledge; the analysis, classification and arrangement of farm jobs and auxiliary knowledge for instructional purposes; lesson plans; observation; critiques; methods of the class period; the home project method and its administration; methods in other supervised practical work; plant and equipment; the relation of the agricultural teacher to the school system.

Ag. Ed. 102-104. Problems in Agricultural Education. One credit hour each term: One laboratory period. Senior year. Required of seniors in Agricultural Education. Prerequisite, Ag. Ed. 101.

The work of this course embraces a study of problems in administration; methods; organization materials; and equipment.

Ag. Ed. 105. Supervised Teaching of Agriculture. Credit not to exceed five hours. Determined by the amount and character of work done. Required of seniors in Agricultural Education. Prerequisite, Ag. Ed. 101.

Class teaching; observation; lesson plans; conferences; and critiques.

Ag. Ed. 106. The Rural Community and Its Education. Three credit hours. Second term. Senior year. Required of seniors in Agricultural Education. Prerequisite, Ag. Ed. 101.

A study of the history, structure, and forces at work in rural communities as a basis for determining the educational needs of such communities and the duties of rural teachers.

Ag. Ed. 107. Methods in Agricultural Extension.. Two credit hours. Third term. Open to juniors and seniors.

This course is given under the supervision of the Extension Service and is designed to equip men to enter the broad field of extension work. The course will cover methods of assembling and disseminating the agricultural information that is available for the practical farmer. It will include administration, organization, supervision and the practical details connected with the work of a successful county agent, club worker, and extension specialist.

Ag. Ed. 108. Agricultural Extension Practice. Credit not to exceed two hours. Determined by amount and character of work done. Given any term. Open to a limited number of seniors in Agricultural Education. Prerequisite, Ag. Ed. 107.

This practice course is given under the supervision of the Extension Service and is especialy designed to give young men practical experience in the conduct of extension work. Students will be required to engage in specialists', county agents' and boys' club work as assistants always under the guidance of experienced men in the respective fields. Traveling expenses for this course will be adjusted according to circumstances, the ability of the man, and the service rendered.

HOME ECONOMICS EDUCATION

H. E. Ed. 101. Methods in Secondary Vocational Home Economics. Five credit hours. Third term. Required of juniors in Home Economics Education.

The purposes of Secondary Vocational Home Economics; a study of types of class-room work and management as observed in high schools; discussion of the methods of teaching; the relation of home economics to the school and home; the planning of lessons and courses of study suitable to the methods and purpose of vocational home economics; analysis of the various home activities in preparation for the home

project; organization of the project; supervision and project reports.

H. E. Ed. 102-104. Problems in Home Economics Education. One credit hour each term. Required of seniors in Home Economics Education. Prerequisite, H. E. Ed. 101.

This course includes the study of problems in administration; organization; materials; and equipment.

H. E. Ed. 105. Supervised Teaching of Home Economics. Credit not to exceed five hours. Determined by the amount and character of work done. Prerequisite, H. E. Ed. 101.

Practice in planning and presenting of courses; conferences and critiques.

H. E. Ed. 106-107. History of the Family. Two credit hours. First and second terms.

This course includes the history of the family from early ages to the present time; the industrial revolution and its effects upon family life; and an examination of the present situation and tendencies as they affect the life of the American family.

H. E. Ed. 108. Education of Women. Two credit hours. Third term.

Woman's work and her industrial and economic conditions are studied with reference to the home and to society. Opening of occupations and professions to women; a study of modern problems of woman and the home, suffrage, education, economic function of woman and the family.

H. E. Ed. 109. Child Care and Welfare. Two credit hours. Third term. Required of seniors in Home Economics Education.

This course deals primarily with the training of children and includes such topics as health habits and child psychology.

H. E. Ed. 110. Methods in Home Economics Extension Work. Two ocredit hours. Third term.

The course will take up the study of subject matter and administrative problems in home economics extension, demonstrations, and the use of graphic materials. Emphasis will be placed upon the improvement of the country home through organization and practical demonstrations as conducted in this State.

INDUSTRIAL EDUCATION

Ind. Ed. 101. Methods in Industrial Education for Secondary Schools. Five credit hours. Third term. Open to juniors and seniors. Required of juniors in Industrial Education.

Types of industrial schools; vocational and trade analysis; the place of auxiliary knowledge; related trade courses; lesson plans; methods;

critiques; the industrial school population; materials and equipment; the relation of the industrial teacher to the school system.

Ind. Ed. 102-104. Problems in Industrial Education. Two credit hours each term: two laboratory periods. Senior year. Required of seniors in Iudustrial Education.

A consideration of the problems of the related trade teacher as they arise in connection with trade analysis; practice teaching; lesson plans; observation; critiques; methods; discipline; organization; management.

Ind. Ed. 105. Supervised Teaching of Industrial Subjects. Credit not to exceed five hours. Determined by the amount and character of work done by the student.

Class teaching; lesson plans; observations; critiques.

Ind. Ed. 106. History of Industrial Education. Three credit hours. Second term. Senior year.

A study of the origin and development of industrial education in the light of group needs; industrial education in the United States; the development of schools; present problems in reorganization.

THE SCHOOL OF CHEMISTRY

Curricula offered in the School of Chemistry prepare students for practical work as research, general analytical, and manufacturing chemists, or to be teachers. Contributory instruction also is given, as most of the students enrolled in other schools of the College are required to take a year or more of chemistry.

Five coördinate departments make up the School of Chemistry. They are organized as follows:

Department of General Chemistry,
Department of Industrial Chemistry,
Department of Biological Chemistry,
Department of Physical Chemistry.
Department of Fertilizer and Food Analysis and Inspection.

The chemical building contains laboratories, offices, and balance room for the State fertilizer, feed and lime control work, lecture rooms, supply room and four student laboratories. In addition, classrooms in Morrill Hall are used as needed. The laboratories are well equipped with standard apparatus and chemicals, chemical and assay balances, polariscopes, refractometers, spectroscopes, microscopes, etc. Each student is provided with a locker, reagents, and apparatus, and has the use of a working desk.

The school is provided with a library of standard reference books on chemistry and related subjects, to which necessary additions are made from time to time.

GENERAL CHEMISTRY

The curriculum offered by the Department of General Chemistry leading to the degree of Bachelor of Science presents the opportunity for a broad training in chemistry. In order that students may become not merely capable analytical chemists, but also may be grounded as deeply as possible in the fundamental principles of all departments of chemical work, practical laboratory manipulation is brought into close relationship with lectures, demonstrations and the work of the classroom. The work prepares students to fill positions in analytical or manufacturing chemistry, as chemists in technical industry, as chemical, sanitary, or consulting experts. The course is well adapted for students wishing to take graduate work in chemistry, as it gives a broad and general knowledge of the science.

GENERAL CHEMISTRY.

FRESHMAN YEAR. Term:	I	II	III
Composition and Rhetoric (Eng. 101-103)	3	3	3
Public Speaking (P. S. 101-103)	1	1	1
Algebra (Math. 106)	3		
Plane Trigonometry (Math. 107)		3	
Plane Analytic Geometry (Math. 108)			3
Mod. Language (M. L. 101-103 or 121-123)	3	3	3
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
Zoology (Zool. 101-102)	3	3	
Botany (Bot. 101)			4
Basic R. O. T. C. Course (M. I. 101)	1	1	1
SOPHOMORE YEAR.			
Adv. Inorganic Chem. (Phys. Chem. 101-103)	3	3	3
Adv. Qualitative Analysis (Gen'l Chem. 104)	3		
Quantitative Analysis (Gen'l Chem. 105-106)		3	3
Plane Analytic Geometry (Math. 109)	3		
Calculus (Math. 110)		3	3
Physics (Phys. 101-103)	5	5	5
Mod. Language (M. L. 104-106-124-126)	3	3	3
Basic R. O. T. C. Course (M. I. 101)	1	1	1
JUNIOR YEAR.			
Organic Chemistry (Gen'l Chem. 114-116)	4	4	4
Adv. Quantitative Analysis (Gen'l Chem. 117-119)	4	4	4
Bacteriology (Bact. 101-103)	3	3	3
Economic (Econ. 101-103)	3	3	3
Elective	3	3	3
SENIOR YEAR.			
Physical Chemistry (Phys. Chem. 104-105)	4	4	
Electro Chemistry (Phys. Chem. 107)			4
Colloid Chemistry (Phys. Chem. 106)			4
Physiological Chemistry (Bio. Chem. 101)	4		
Plant Biochemistry (Bio. Chem. 102)			3
Industrial Chem. (Ind. Chem. 107-108)	5	5	
English (Eng. 104-106)	2	2	2
Elective	2	6	4

Gen'l Chem. 101-103. General Chemistry and Qualitative Analysis. Four credit hours each term: three lectures and one laboratory period. The first term. Two lectures and two laboratory periods. The second and third terms.

A study of the non-metals and metals. The non-metals are first considered. Special attention is given those elements and compounds which are of industrial importance. The laboratory work accompanying this course in the first term consists, chiefly, of experiments illustrative of the work in the class. During the last two terms systematic qualitative analysis of the more common bases and acids is the laboratory work pursued.

Gen'l Chem. 104. Advanced Qualitative Analysis. Three credit hours: three laboratory periods. The first term. Prerequisite, Gen'l Chem. 101-103.

An advanced course of Qualitative Analysis for chemical students.

Gen'l Chem. 105-106. Quantitative Analysis. Three credit hours: three laboratory periods. The second and third terms. Prerequisites, Gen'l Chem. 101-103, 104.

The principal operations of quantitative analysis. Standardization of chemical balance. Stardardization of weights and apparatus used in chemical analysis. Typical gravimetric volumetric, colorimetric and electrolytic methods are taken for study.

Gen'l Chem. 107-108. Quantitative Analysis. Three credit hours: one lecture and two laboratory periods. The first and second terms. Prerequisite, Gen'l Chem. 101-103.

Quantitative analysis for agricultural students. Typical gravimetrie and volumetric methods.

Gen'l Chem. 109. Technical Analysis. Two credit hours: two laboratory periods. The second term. Prerequisites, Gen'l Chem. 101-103.

The analysis of oils, fuels, gases, boiler waters, etc., for students in engineering.

Gen'l Chem. 110. Determinative Mineralogy and Assaying. Three credit hours: one lecture and two laboratory periods. Third term. Prerequisites, Chem. 101-103, 104.

This is a course of determinative mineralogy. The more important minerals are identified by their characteristic physical and chemical properties. Assays of gold, silver, copper and lead, etc., are made.

Gen'l Chem. 111. Metallurgical Calculations. Two credit hours: two lectures. The second term.

A course of problems embodying the use of physical, chemical and mechanical principles utilized in practical metallurgy.

Gen'l Chem. 112-113. Organic Chemistry. Three credit hours each term: two lectures and one laboratory period. The first and second terms. Prerequisite, Gen'l Chem. 101-103.

A study of the aliphatic and aromatic compounds. The course is designed primarily for agricultural students.

For Graduates and Advanced Undergraduates

Gen'l Chem. 114-116. Advanced Organic Chemistry. Four credit hours each term: three lectures and one laboratory period. The year. Prerequisites, Gen'l Chem. 101-103 (105-106 or 107-108)).

This course is particularly designed for advanced students and offers a detailed study of the typical organic compounds.

Gen'l Chem. 117-119. Advanced Quantitative Analysis. Four credit hours each term: two lectures and two laboratory periods. Prerequisites, Gen'l Chem. 101-103, 104-106.

A continuation of courses 105-106. An advanced course of quantitative analysis where the student may elect to study the methods used in agricultural, biological, or industrial chemistry.

For Short-Course Students

Gen'l Chem. 1. General Chemistry. Two lectures and one laboratory period. The first and second terms.

This course consists of an elementary study of general chemistry, with special reference to the chemistry of plants, animals, soils, fertilizers, etc., for students in the two-year course in agriculture.

INDUSTRIAL CHEMISTRY

Curricula in the Department of Industrial Chemistry are Chemical Engineering and Agricultural Chemistry. The former is designed to equip students with a highly specialized knowledge of the construction and management of manufacturing establishments involving chemical principles; the latter prepares for research and analytical work that have to do with the relationship of chemistry to agriculture. Technical and educational positions are open to men and women trained in various phases of chemical engineering, in plant and animal chemistry, in the analysis of soils, fertilizers, and spray materials, and in food and dairy studies.

In addition to many of the subjects in chemistry, chemical engineering includes the study of boilers, steam engines, drawing and design, elements of machinery, measurement of power, and work in the engineering laboratory. It also includes advanced courses in electricity and magnetism, dynamos and motors, and experimental practice in the electrical and dynamo laboratories. However, the graduates primarily are chemists with a good knowledge of mechanical and electrical engineering, and with additional training in the special mechanical and electrical appliances of industrial chemistry.

CHEMICAL ENGINEERING.

FRESHMAN YEAR. Term:	I	II	III
Composition and Rhetaric (Eng. 101-103)	3	3	3
Public Speaking (P. S. 101-103)	1	1	1
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
Trigonometry (Math. 101)	5		
Analytics (Math. 102-103)		5	5
Plane Surveying (Surv. 101-102)		2	1
Freehand Drawing (Dr. 101)	1		
Mechanical Drawing (Dr. 102-103)	2	1	
Engineering Drawing (Dr. 104)		1	
Descriptive Geometry (Dr. 105)			3
Woodwork (Shop 103)	1		
Basic R. O. T. C. Course (M. I. 101)	1	1	1

SOPHOMORE YEAR.

Adv. Inorganic Chem. (Phys. Chem. 101-103)	3	3	3
Adv. Qualitative Anal. (Gen'l Chem. 104)	3		
Quantitative Analysis (Gen'l Chem. 105-106)		3	3
Physics (Phys. 101-103)	5	5	5
Adv. Algebra (Math. 104)	3		
Calculus (Math. 105)	2	5	5
Steam Engines (M. E. 102)	3		
Analytical Mechanics (Mech. 102)			3
Graphic Statistics (Mech. 101)		3	
Basic R. O. T. C. Course (M. I. 101)	1	1	1

JUNIOR YEAR.

Organic Chemistry (Gen'l Chem. 114-116)	4	4	4
Adv. Quantitative Analysis (Gen'l Chem. 117-119)	4	4	4
Mod. Language (French 104 or German 104)	5	5	5
Technical Composition (Eng. 104)	1	1	1
Dynamos and Motors (E. E. 111-112)	2	2	
Electrical Engineering Lab. (El. Lab. 102-103)	1	1	
Hydraulics (Hyd. 101)			3

SENIOR YEAR.

Physical Chemistry (Phys. Chem. 104-105)	4	4	
Electro Chemistry (Phys. Chem. 107)			4
Colloid Chemistry (Phys. Chem. 106)			4
Industrial Chemistry (Ind. Chem. 107-108)	5	5	
Economics (Econ. 101-103)	3	3	3
Heat Engineering (M. E. 104-105)	2	3	3
Hydromechanics (Hyd. 103)	3		
Metallurgical Calculations (Gen'l Chem. 111)		2	
Min. and Assaying (Gen'l Chem. 110)			3

AGRICULTURAL CHEMISTRY.

FRESHMAN YEAR. Term:	I	II	III
Composition and Rhetoric (Eng. 101-103)	3	3	3
Public Speaking (P. S. 101-103)	1	1	1
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
Mod. Language (M. L. 101-103, 121-123)	3	3	3
Algebra (Math. 106)	3		
Plane Trigonometry (Math. 107)		3	
Plane Analytic Geometry (Math. 108)			3
Zoology (Zool. 101-102)	3	3	
Botany (Bot. 101)			4
Basic R. O. T. C. Course (M. I. 101)	1	1	1

SOPHOMORE YEAR.			
Adv. Inorganic Chem. (Phys. Chem. 101-103)	3	3	3
Adv. Qualitative Anal. (Gen'l Chem. 104)	3		
Quantitative Analysis (Gen. Chem. 105-106)		3	3
Physics (Phys. 101-103)	5	5	5
Mod. Language (M. L. 104-106, 124-126)	3	3	3
Plane Analytic Geometry (Math. 109)	3		
Calculus (Math. 110)		3	3
Basic R. O. T. C. Course (M. I. 101)	1	1	1

JUNIOR YEAR.			
Organic Chemistry (Gen'l Chem. 114-116)	4	4	4
Adv. Quantitative Analysis (Gen'l Chem. 117-119)	4	4	4
Economic (Econ. 101-103)	3	3	3
Bacteriology (Bact. 101-103)	3	3	3
Electives in Agriculture	3	3	3

SENIOR YEAR.			
Physical Chemistry (Phys. Chem. 104-105)	4	4	
Colloid Chemistry (Phys. Chem. 106)			4
Agricultural Chemistry (Ind. Chem. 105-106)		5	5
Physiological Chemistry (Bio. Chem. 101)	4		
Plant Bio. Chemistry (Bio. Chem. 102)			3
English (Eng. 104-106)	2	2	2
Electives in Agriculture	7	6	3

DESCRIPTION OF COURSES

Ind. Chem. 101. Agricultural Chemistry. Four credit hours: three lectures and one laboratory period. The third term. Prerequisites, Gen'l Chem. 101-103, 107-108.

A course including lectures, recitations, and laboratory in the chemistry of air, soils, feeds, fertilizers, plants and animals.

For Graduates and Advanced Undergraduates

Ind. Chem. 102-104. Agricultural Chemical Analysis. Four credit hours each term: two lectures and two laboratory periods. The year.

Prerequisites, Gen'l Chem. 101-103, 105-106 or 107-108.

Lectures, laboratory work, analysis of soils, fertilizers, plant and animal products.

Ind. Chem. 105-106. Advanced Agricultural Chemistry. Five credit hours each term: three lectures and two laboratory periods. The second and third terms. Prerequisites, Gen'l Chem. 101-103 (105-106 or 107-108), 114-116.

A study of special problems in agricultural chemistry.

Ind Chem. 107-108. Industrial Chemistry. Five credit hours each term: three lectures and two laboratory periods. The first and second terms. Prerequisites, Gen'l Chem. 101-103, 104-105, 106-108, 114-116.

The study of practical methods employed in the various inorganic and organic chemical industries. Visits are made to ice, fermentation and gas plants, also to fertilizer, glass, coke, iron and steel works. The laboratory work accompanying this course consists of the analysis of industrial products.

DEPARTMENT OF BIOLOGICAL CHEMISTRY

In arranging the curriculum the Department of Biological Chemistry has borne in mind the many calls for men trained in chemistry with a working knowledge in general biology and the chemistry of foods and nutrition. With proper electives the biochemical curriculum also affords a good foundation for the study of medicine and for those desiring to pursue graduate work in biochemistry or plant physiology.

BIO-CHEMISTRY.

FRESHMAN YEAR. Term:	I	II	III
Composition and Rhetoric (Eng. 101-103)	3	3	3
Public Speaking (P. S. 101-103)	1	1	1
Mod. Language (M. L. 101-103, 121-123)	3	3	3
Algebra (Math. 106)	3		
Plane Trigonometry (Math. 107)		3	
Plane Analytic Geometry (Math. 108)			3
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
Zoology (Zool. 101-102)	3	3	
Botany (Bot. 101)			4
Basic R. O. T. C. Course (M. I. 101)	1	1	1
SOPHOMORE YEAR.			
Adv. Inorganic Chem. (Phys. Chem. 101-103)	3	3	3
Adv. Qualitative Analysis (Gen'l Chem. 104)	3		
Quantitative Analysis (Gen'l Chem. 105-106)		3	3
Physics (Phys. 101-103)	5	5	5
Mod. Language (M. L. 104-106, 124-126)	3	3	3
Plane Analytic Geometry (Math. 109)	3		
Calculus (Math. 110)		3	3
Basic R. O. T. C. Course (M. I. 101)	1	1	1

JUNIOR YEAR. TERM:	I	II	III
Organic Chemistry (Gen'l Chem. 114-116)	4	4	4
Economics (Econ. 101-103)	3	3	3
Bacteriology (Bact. 101-102)	3	3	
Plant Physiology (Plant Phys. 101-102)		4	3
Electives	7	3	7

SENIOR YEAR.

Physical Chemistry (Phys. Chem. 104-105)	4	4	
Colloid Chemistry (Phys. Chem. 106)			4
Physiological Chemistry (Bio. Chem. 101)	4		
Plant Bio. Chemistry (Bio. Chem. 102)			3
Agricultural Chemistry (Ind. Chem. 105)		5	
English (Eng. 104-106)	2	2	2
Elective	7	6	3

DESCRIPTION OF COURSES

For Graduates or Advanced Undergraduates

Bio-Chem. 101. Physiological Chemistry. Four credit hours: two lectures and two laboratory periods. First term. Prerequisites, Gen'l Chem. 101-103, 105-106, 114-116.

The course embraces a study of the chemistry of protoplasm and the cell; the nutritive requirements of foods and the chemical composition of foodstuffs; catalysis and enzymes; electrolytes and their action; the chemical and physiological processes of digestion, absorption, secretion, excretion, respiration, metabolism and nutrition in general.

Bio-Chem. 102. Plant Biochemistry. Three credit hours: two lectures and one laboratory period. Third term.

An advanced course in biochemistry from the standpoint of plants and plant products. Synthesis and transformations of materials in plants and plant organs and the relation of plant processes to animal food and nutrition are especially emphasized.

DEPARTMENT OF PHYSICAL CHEMISTRY

The Physical Chemistry courses have been designed to give the students a knowledge of physico-chemical phenomena and methods of treating such phenomena as will be helpful in the study of biological, medical and industrial problems. Some courses are designed for graduate work, and research problems will be assigned to students who are properly qualified.

DESCRIPTION OF COURSES

Phys. Chem. 101-103. Inorganic Chemistry. Three credit hours each term: three lectures. The year. Prerequisites, Gen'l Chem. 101-103.

An anvanced course covering more in detail the subject matter set forth in general chemistry with emphasis on chemical theory and important generalization. Required of all students who have chosen chemistry as major. Text-book Mellor.

Phys. Chem. 104-105. Elements of Physical Chemistry. Four credit hours each term: three lectures and one laboratory period. The first and second terms. Prerequisites, Gen'l Chem. 101-106, Math. 105 or 110, Physics 101-103.

Will present those portions of physical chemistry which are necessary to every chemist, student of medicine, bacteriologist, or teacher of chemistry with laboratory practice in thermomentry and temperature regulation; physical constants; molecular weight determinations; velocity of reactions; chemical equilibrium and law of mass action; measurements of conductivity; migration of ions; hydrogen-ion concentration, etc.

For Graduates and Advanced Undergraduates

Phys. Chem. 106. Colloidal Chemistry. Four credit hours: three lectures and one laboratory period. The third term. Prerequisites, Gen'l Chem. 114-116, Phys. Chem. (104-105), Physics 101-103.

The following topics will be discussed: The general constitution of colloid systems; Relations between the physical state and the general properties of colloid systems; General energetics of the dispersoids; Distribution of the colloid state and the concept of colloid chemistry; Mechanical properties of colloid systems.

Phys. Chem. 107. Electrochemistry. Four credit hours: three lectures and one laboratory period. The third term. Prerequisites, Phys. Chem. 104-105.

In this course the various factors which govern the action of electrolytes when subject to the action of the electric current and the factors which determined electromative force are taken up.

For Graduates

Phys. Chem. 201. Special Colloidal Chemistry. Two credit hours: two lectures. Prerequisite, Phys. Chem. (106).

Special topics will be taken up with emphasis on the most recent theories and research going on in colloid chemistry at the present time.

Phys. Chem. 202. Physical Chemistry. Three credit hours each term: two lectures and one laboratory period. The first and second terms. Prerequisites, Gen'l Chem. 101-103, 106-108, Physics 101-103.

A study of the more advanced theories of physical chemistry with laboratory practice in the more technical physico-chemical measurements.

Phys. Chem. 203. Thermodynamics. Two credit hours each term: two lectures. Prerequisites, Gen'l Chem. 101-108, Phys. Chem. 104-105, Math. 101-105, Physics 101-103.

Designed for graduate students who wish an advanced mathematical treatment of chemical phenomena. Mellor's chemical statics and dynamics will be applied to Lewis' system of Physical Chemistry.

Phys. Chem. 204. Research in Physical Chemistry.

Physical chemistry problems for investigation will be assigned to graduate students who wish to gain an advanced degree in chemistry.

DEPARTMENT OF FERTILIZER AND FOOD ANALYSIS AND INSPECTION

Under the jurisdiction of the Department of Fertilizer and Food Analysis and Inspection is conducted the State's inspection work, including sampling, analysis, and the publication of results on fertilizers, stock foods, and agricultural lime.

THE SCHOOL OF HOME ECONOMICS

Research into the sciences and the development of industries, art, and professions has so changed the philosophy of our educational system that it is now recognized that any educational system must include training of a technical nature. It must encourage the student's natural desire for work of a productive nature with a vital connection between theory and practice. These views have not been generally accepted and the result is noted in the combination of vocational, technical, and scientific work with the general studies to form a new course of study for our young men and women.

The subjects taught in home economics are designed to fit young women to be capable workers and home makers in whatever sphere of life they may enter. The knowledge they gain from these subjects should give them contentment, industry, order, and a womanly feeling of independence and responsibility.

The courses of instruction given are planned to meet the needs of three classes of students: (1) those students who desire a knowledge of the general facts and principles of home economics; (2) those students who wish to make a speciality of home economics for the purpose of teaching the subject in secondary schools and colleges; (3) those who are interested in certain phases of home economics which deal with the work of the dietitian or of institutional manager.

Organization

For adminstrative purposes and for ease of instruction the School of Home Economics is organized into departments as follows:

1. Department of Foods and Cookery.
2. Department of Textiles and Clothing.
3. Department of Hygiene and Health.
4. Department of Institutional and Home Management.

Equipment

Besides the usual equipment of classrooms and laboratories for the efficient procedure of the work, the college has recently equipped and furnished a house which is to be used as a practice house where the students will live and conduct the operations of the household for a period of from six to ten weeks during their senior year.

Requirements for the Degrees

The degree of Bachelor of Science is conferred for the satisfactory completion of four years of prescribed courses.

Curricula in Home Economics

All students registered in the School of Home Economics take the same work in the freshman year. At the end of the year they may elect to specialize in a particular department or they may withhold the election until after the sophomore year without loss of time.

Those who do not wish to specialize in any particular phase of home economics may elect a curriculum of general home economics best suited to their needs.

HOME ECONOMICS.

FRESHMAN YEAR. Term:	I	II	III
Composition and Rhetoric (Eng. 101-103)	3	3	3
Gen'l Chem. and Qualitative Anal. (Gen'l Chem. 101-103)	4	4	4
*Garment Construction (Cloth. 101)	2		
Drafting and Elementary Dress Design (Cloth. 102)	4		
Textiles (Tex. 101)		1	
Clothing (Cloth. 103)		3	
Composition and Design (Art 101)		2	
Foods 101			6
Physical Education (Phy. Ed. 101-103)	2	2	2
Electives	2–4	3	3
SOPHOMORE YEAR.			
Organic Chemistry (Gen'l Chem. 112-113)	3	3	
Zoology (Zool. 101-102)	3	3	
Botany (Bot. 101)			4
History	3	3	3
Laundering (Tex. 102)	2		
Advanced Textiles (Tex. 103)	1		
Costume Design (Art 103)			3
Foods 102		4	4
Library Science	1		
Physical Education	2	2	2
Electives	3	3	2
JUNIOR YEAR.			
Bacteriology (Bact. 101)	3	3	
Household Administration (H. M. 101-102)	3	3	
Home Management (H. M. 103)			5
Marketing and Buying (H. M. 106)		2	
Advanced Dressmaking (Cloth. 104-105)	2		2
Freehand Prospective (Art 102)	2		
Home Architecture and Decoration (Art 105)		2	
Electives	6	6	8
SENIOR YEAR.			
Physiological Chemistry (Bio-Chem. 101)	4		
Nutrition (Foods 105)		5	
Dietetics (Foods 106)			5
Child Care and Welfare (H. E. Ed. 109)			2
Drapery and Advanced Technique of Clothing (Cloth. 106)			5
English	3	3	3
Seminar in Home Economics (Hours and time to be arranged)			
Electives	3	10	8

*Students with high school training in Textile and Clothing presenting satisfactory credentials are not required to take Cloth. 101.

SUGGESTED ELECTIVES FOR STUDENTS IN THE SCHOOL OF HOME ECONOMICS.

SUBJECT. Term:	I	II	III
Quantitative Analysis (Gen'l Chem. 105-106)		3	3
Bacteriology (Bact. 103)			3
Literature	3	3	3
Public Speaking	1	1	1
Public Speaking	2	2	2
Language (French, Spanish, German)	3	3	3
Mathematics	3	3	3
Political Science	2	2	2
Economics	3	3	3
General and Applied Psychology (Prin. Ed. 105-106)		2	2
Educational Sociology	2	2	
Educational Psychology		2	2
Rural Sociology			2
Educational Guidance	1	1	1
Public Education in the U. S. (Ed. 101)	2		
Lunchroom Management (H. M. 105-106)	3	3	
Catering (Food 109)			3
Housewifery (H. M. 109)			3
Home Nursing and First Aid (H. M. 107)		3	
History of the Family (H. E. Ed. 106-107)	2	2	
Education of Women (H. E. Ed. 108)			2
Tailoring (Cloth. 107)		3	
Millinery (Cloth. 108)		3	
Historic Ornament and Dress Design (Art 106)	3	3	
Art and Handicraft (Art 104)	2		
Mechanical Drawing (Dr. 102)		3	
History of Art (Art 107)			3
Music	2	2	2

Description of Courses

Foods 101. Preparation and Service of Foods. Six credit hours ethree lectures and three laboratory periods.

Preparation and service of meals for a family and larger groups; cost and dietetic values; invividual problems in the manipulation of food materials.

Foods 102-103. Advanced and Experimental Cookery. Four credit hours each term: two lectures and two laboratory periods. Prerequisites Foods 101.

Advanced work in cookery in treating cooking in large amounts and various experimental problems to be worked out.

Foods 104. Nutrition. Five credit hours: Second term. Prerequisite, Chem. 110-111, 132.

The physiological, chemical, and bacteriological aspects of food.

Foods 105. Dietetics. Five credit hours. Third term. Prerequisite, Foods 104.

This course deals with the requirements of the individual in health and disease throughout infancy, childhood, adolescence, adult life, and old age, in the light of the chemistry and physiology of digestion, the

energy value of food, and the nutritive properties of the proteins, fats, carbohydrates and ash constituents. Typical dietaries are planned for each group.

Foods 106. Catering. Three credit hours. Third term. Prerequisites, H. M. 104-105.

This course is intended for students who are interested in the problems connected with the management of the rooms and catering establishments.

Tex. 101. Textiles. One credit hour: one lecture. Scond term.

This course considers the textile industry from primitive ages to modern times; the important fibres and materials made from them.

Tex. 102. Laundering. Two credit hours: two laboratory periods. First term.

Behavior of textile fibers toward various cehmical reagents; physical tests for identification of fibers; bleaching; laundry processes as they affect color, shrinkage, etc.; art and economic considerations in selection and purchase of materials for clothing and household hurnishing.

Tex. 103. Advanced Textiles. One credit hour: one laboratory period.

This course deals with textile dyeing. Problems will be worked out that are especially adaptable for home use.

Cloth. 101. Garment Construction. Two credit hours: two laboratory periods. First term.

This course includes the making of fundamental stitches, darning and patching; practice in hand and machine sewing applied to simple garments.

Cloth. 102. Drafting and Elementary Dress Design. Four credit hours:four laboratory periods. First term.

The first half of the term is devoted to the use of the commercial pattern and the making of a simple woolen skirt. The second half deals with drafting, cutting, fitting and designing of patterns. Emphasis is laid upon the development of designs from a simple foundation pattern. Designs are worked out upon paper patterns and adapted in the construction of a cotton or linen dress.

Cloth. 103. Dressmaking. Three credit hours: one lecture and two laboratory periods. Second term. Prerequisite, Cloth 102.

The lecture work is chiefly devoted to clothing economics and the clothing budget. The pattern designed in Cloth 102 is used in the construction of a cotton or linen garment. Special attention is given to the technique involved.

Cloth. 104-105. Advanced Dressmaking. Two credit hours each term: two laboratory periods. First and second terms. Prerequisites, Cloth. 102, 103, Art 101, 103.

This course includes remodeling of a dress and problems in wool or silk.

Cloth. 106. Draping and Advanced Technique of Clothing. Five credit hours: one lecture and four laboratory periods. First term. Prequisite, Cloth. 105.

This course emphasizes the artistic in lines and decoration; deals with the design and adaption of materials for the individual. It includes practice in cutting, fitting, finishing, and draping of such materials as silks, satin, chiffons and laces.

Cloth. 107. Tailoring. Three credit hours: three laboratory periods. Second term. Prerequisite, Cloth. 106.

The technique and methods of construction employed in the making of tailored spits and wraps.

Cloth. 108. Millinery. Three credit hours: three laboratory periods. Second term.

A study of the processes and materials used in millinery; designing, making, and trimming hats.

Art 101. Composition and Design. Two credit hours: two laboratory periods. Second term.

Practice drawing in charcoal and pencil; space division and space relation; color; color schemes and exercises; original designs in which lines, tones, and colors are put together to produce fine quality.

Art 102. Freehand Perspective. Two credit hours: two laboratory periods. First term.

Study of perspective principles with application.

Art 103. Costume Design. Three credit hours: one lecture, two laboratory periods.

Appropriate dress, proportion of parts; application of color, harmony, art to design for costume in ink and water color. This history of costume is discussed in the lecture work.

Art 104. Art and Handicraft. Two credit hours: one lecture and one laboratory period. First term.

Applied design in embroidery, lace, stencils, as adapted to materials for articles of dress and house furnishing.

Art. 105. Home Architecture and Decoration. Two credit hours: one lecture and one laboratory period. First term. Prerequisite, Art 101, 102.

Situation, surroundings, and construction of the house; evolution of the house and home; application of color in home decoration; furnishings from a sanitary and artistlc standpoint; perspective drawing of rooms.

Art 106. History of Ornament and Design. Two credit hours. First term.

This course continues the work of Art 103.

H. M. 101-102. House Administration. Three credit hours each term. First and second terms. Junior year.

This course deals with the operation and maintenance of the household; its sanitation, plumbing, furnishing, and equipment.

H. M. 103. Home Management (Practice House). Five credit hours. Third term. Junior year.

From eight to ten weeks' experience as manager and helper in a household of five students.

H. M. 104-105. Lunchroom Management. Three credit hours each term. First and second terms. Prerequisites, Foods 101, 102.

A general course in lunchroom management for those who wish a knowledge of the problem of feeding large numbers.

H. M. 106. Marketing and Buying. Two credit hours. Second term.

How to buy foods; qualities and prices; market grades adn related values.

H. M. 107. Home Nursing and First Aid. Three credit hours. Second term.

Instruction in domestic emergencies and first aid, and in the simple procedures in the home care of the sick.

THE GRADUATE SCHOOL

Graduate work is offered to graduates of this or other standard colleges who, in the judgment of the Dean of the Graduate School, are qualified to undertake that work. Each individual case must be determined upon its merits.

The graduate work is offered, under the supervision of the Dean of the Graduate School, by competent members of the various faculties of instruction and research. These constitute the Faculty of the Graduate School.

Work in accredited research laboratories of the U. S. Department of Agriculture and other local national research agencies under competent supervision is accepted, when previously arranged, as work in residence for part of the requirement. These laboratories are located in easy daily reach of the University.

Advanced Degrees

The advanced degrees conferred are Master of Science and Doctor of Philosophy for work in Agriculture and the natural sciences; Master of Arts for work in Liberal Arts, Education and Home Economics, and Doctor of Philosophy in Liberal Arts.

Master of Science and Master of Arts

The degree of Master of Science, or Master of Arts, will be conferred upon resident graduates who meet the following requirements:

1. The candidate must be a graduate of a qualified institution and must have the necessary prerequisites for the field of advanced work chosen.

2. He must complete a course of approved graduate study with one major and one closely related minor subject, working on a full-time basis of one year of advanced work. The work may, when approved, be extended on a part-time basis over a longer period.

3. The candidate must submit a thesis approved by the Graduate Faculty.

4. The candidate must pass a satisfactory examination.

Doctor of Philosophy

1. As prerequisites to registration for the Doctor's degree, the candidate must be a graduate of a standard college, must have a reading knowledge of French or German, and the necessary basic training in the field in which he proposes to take advanced work.

2. Three years of graduate study will usually be required. At least one year must be in residence. The importance and quality of the work, as well as the time element, will be considered. On a part-time basis the time needed will be correspondingly increased. The work must be intersive research, resulting in an important contribution.

3. The candidate must select a major and one or two closely related minor subjects, constituting a single field of research.

4. The candidate must present a thesis within the field of research selected. This must be in the hands of the Dean of the Graduate School in printed or typewritten form at least two weeks before the time at which degrees are granted.

5. The candidate must pass a final examination in the major and minor subjects. The examination will be given by a committee appointed by the Dean.

Advanced Professional Degrees in Engineering

The degrees of Civil Engineer, Electrical Engineer or Mechanical Engineer will be granted only to graduates of this College who have obtained a bachelor's degree in engineering. The applicant must satisfy the following conditions:

1. He shall have been engaged successfully in acceptable engineering work for three years.

2. His registration for a degree must be approved at least 12 months prior to the date at which the degree is sought. He shall present with his application a complete report of his engineering experience and an outline of his proposes thesis.

3. He shall present a satisfactory thesis on an approved subject.

4. He must be considered eligible by a committee composed of the Dean of the School and the heads of the Departments of Civil, Electrical and Mechanical Engineering.

DEPARTMENT OF MILITARY SCIENCE AND TACTICS

Reserve Officers' Training Corps

The work in this department is based upon the provisions of Special Regulations No. 44, War Department, 1919.

Authorization. An infantry unit of the Senior Division of the Reserve Officers' Training Corps has been established at the University under the provisions of the Act of Congress of June 3, 1916, as amended by the acts of June 3, 1916, and September 8, 1916.

Object. The primary object of the Reserve Officers Training Corps is to provide systematic military training at civil educational institutions for the purpose of qualifying selected students of such institutions as reserve officers in the military forces of the United States. It is intended to attain this object during the time that students are pursuing their general or professional studies with the least practicable interference with their civil careers, by employing method designed to fit men, physically, mentally and morally for pursuits of peace as well as pursuits of war. It is believed that such military training will aid greatly in the development of better citizens.

Required to Take Instruction. All male students, if citizens of the United States whose bodily condition indicate that they are physically fit to perform military duty or will be upon arrival at military age, whether pursuing a four-year or a two-year course of study, are required to take for a period of two years, as a prerequisite to graduation, the military training required by the War Department.

Credit Given. These students who have completed satisfactorily, the prescribed training with a unit of the S. A. T. C. may be credited with one year of the Basic Course prescribed for the R. O. T. C., and those students who have received military training at an educational institution under the direction of an army officer detailed as professor of military science and tactics may receive credit for instruction equivalent to that given in the senior division R. O. T. C.

Time Allotted. For first and second year, basic course, three periods a week of not less than one hour each are devoted to this work, of which at least one hour is utilized for theoretical instruction.

For third and fourth years, advanced courses, elective, five periods a week of not less than one hour each are devoted to this work, of which at least three periods are dutilized for theoretical instruction.

Physical Training. Physical training forms an important part in military instruction, and it is the policy of the Miliary Department to encourage and support the physical training given by civilian teachers, thus cooperating in an effort to promote a vigorous manhood.

Physical Examination. All members of the Reserve Officers Training Corps are required to be examined physically at least once after entering the University.

Uniforms. Members of the Reserve Officers' Training Corps must appear in proper uniforms at all military formations and at other specified times.

Uniforms for the Reserve Officers' Training Corps will be furnished free by the Government. The uniforms are the regulation uniform of the United States Army, with certain distinguishing features. Such uniforms must be kept in good condition by the student. They are the property of the Government and though intended primarily for use in connection with military instruction may be worn at any other time unless the regulations governing their use are violated. The uniform cannot be worn in part. Uniforms will be returned to the Military Department at the end of the year, and before if the student leaves the University.

Commutation. Those students who elect the advanced courses and who have signed the contract with the Government to continue in the Reserve Officers' Training Corps for the two remaining years of the advanced course are entitled to commutation of subsistence from and including the date of contract until they complete the course at the institution.

Summer Camps. An important and excellent feature of the Reserve Officers' Training Corps is the summer camp. In specially selected parts of the country camps are held for a period not exceeding six weeks for students who are members of the Reserve Officers' Training Corps. These camps are under the strict supervision of army officers and are intended primarily to give a thorough and comprehensive practical course of instruction in the different arms of the service. Parents may feel assured that their sons are carefully watched and safeguarded. Wholesome surroundings and associates, work and healthy recreation are the key-note to contentment. Social life is not neglected and the morale branch exercises strict censorship over all social functions.

The attendance at summer camps is compulsory only for those students who are taking the advanced course.

Commissions. (a) Each year upon completion of the Advanced Course, students qualified for commissions in the Reserve Officers' Corps

will be selected by the heads of the institution and the professor of Military Science and Tactics.

(b) The number to be selected from each institution and for each arm of the service will be determined by the War Department.

Credits. Military instruction at this University is on a par with other university work and the requirements of this department are proficiency the same as with other departments.

Basic Course, M. I.

First year (generally given to freshmen and the first-year students in the two-year course). Two credits per term.

Second year (generally given to sophomores and the second-year students in the two-year course. Two credits per term.

Advanced Course, M. I. (elective)

Third year (generally given to juniors). Three credits per term,

Fourth year (generally given to seniors). Three credits per term.

Description of Courses

M. I. 101. Basic R. O. T. C.. Two credit hours each term. Freshman year.

The following subjects will be covered:

First Term

Physical Training, Manual of Physical Training (Practical).
Infantry Drill Regulations (Practical and Theoretical).
School of Squad, inclusive.
Small Arms Firing; Collective Firing, inclusive (Practical and Theoretical).
Military Courtesy, Customs of the Service.
Care and Handling of Equipment (Practical and Theoretical).
Lectures. Personal Hygiene.
Examination at end of term.

Second Term

Physical Training, Manual of Physical Training (Practical).
Infantry Drill Regulations to include the platoon (Practical and Theoretical).
Small Arms Firing.
Map Reading. Military Sketching (Theoretical).
Minor Tactics, Infantry, Map Problems (Practical and Theoretical).
Examination at end of term.

THIRD TERM

Physical Training, Manual of Physical Training (Practical).
Infantry Drill Regulations, Company and Battalion Drill (Practical).
Service of Security and Information (Practical and Theoretical).
Camp Hygiene. Infantry Map Problems (Practical and Theoretical).
Lecture to cover other subjects. Examination at end of term.

M. I. 102. Basic R. O. T. C. Two credit hours each term. Sophomore year.

The following subjects will be taught:

FIRST TERM

Physical Training, Manual of Physical Training (Practical).
Infantry Drill Regulations; School, of the Squad, inclusive (Practical and Theoretical).
Theory of Target Practice (Practical and Theoretical).
Military Courtesy and Discipline (Practical and Theoretical).
Minor Tactics. Map Problems.
Personal Hygiene. Lectures on other subjects.
Examination at end of term.

SECOND TERM

Physical Training, Manual of Physical Training (Practical).
Infantry Drill Regulations, Drill with Battalion (Practical).
Camp Sanitation (Theoretical).
Trench and Open Warfare (Theoretical).
Military Engineering (Practical and Theoretical).
Topography (Practical and Theoretical).
Small Arms Firing (Theoretical).
Lecture to cover other subjects. Examination at end of term.

THIRD TERM

Physical Training, Manual of Physical Training (Practical).
Infantry Drill Regulations (Practical).
Minor Tactics. Map Problems. Topography (Theor. and Practical).
Same for all Arms (Practical and Theoretical).
Lecture to cover other subjects. Examination at end of term.

M. I. 103. Advanced R. O. T. C. Three credit hours each term. Junior year.

The following subjects will be covered:

FIRST TERM

Physical Training (Practical). Infantry Drill Regulations, Drill with Battalion.
Use of Infantry Arm in War. Special Arms, Machine Guns, Automatic Rifles, Trench Mortars (Theoretical and Practical).

Military Drawing (Practical). Minor Tactics. B/H Relief Map.
Hygiene, 1st Aid and Sanitation (Theoretical).
Military Courtesy and Discipline (Theoretical and Practical).
Lectures on other subjects. Examination at end of term.

SECOND TERM

Physical Training. Minor Tactics. B/H Relief Map (Practical and Theoretical).
Design of Military Structures (Practical and Theoretical).
Equipment (Prac. and Theor.). Field Engineering (Theoretical).
Lectures on other subjects. Examination at end of term.

THIRD TERM

Physical Training. Infantry Drill Regulations. Drill with Battalion (Practical). Minor Tactics.
Map and Terrain Problems (Prac.). Topography (Prac. and Theor.).
Law, Common and Military (Theor). Military Policy (Theor.).
Lectures on other subjects. Examination at end of term.

M. I. 104. Advanced R. O. T. C. Three credit hours per term. Senior year.

The following subjects will be covered:

FIRST TERM

Physical Training. Infantry Drill Regulations.
Drill with Battolion. The War Game on B/H Relief Map.
Administration. Army Paper Work (Theoretical).
Personal Hygiene, 1st Aid and Sanitation (Theor.). Minor Tactics.
Lectures on other subjects. Examination at end of term.

SECOND TERM

Physical Training (Practical). Hippology (Theoretical).
Military Law (Theoretical). The War Game on B/H Relief Map.
Musketry (Theoretical and Practical).
Topography and Map Reading (Theoretical and Practical).
Minor Tactics (Practical).
Lectures on other subjects. Examination at end of term.

THIRD TERM

Physical Training (Practical). Infantry Drill Regulations.
Drill with the Battalion. Military Policy of the United States.
Military History to include the Study of War with Germany (Theor.).
Minor Tactics. Terrain and Map Problems (Theor. and Prac.).
Lectures on other subjects. Examination at end of term.

ELECTIVE COURSES

TERM:	I	II	III
SCHOOL OF AGRICULTURE			
HORTICULTURE:			
Elementary Pomology (Hort. 101)	4		
Commercial Fruit Growing (Hort. 102-103)	3		
Systematic Pomology (Hort. 104)	3		
Advanced Practical Pomology (Hort. 105)	1		
Small Fruit Culture (Hort. 106)			3
Economic Fruits of the World (Hort. 107)		3	
Fruit and Vegetable Judging (Hort. 108)	2		
Advanced Fruit Judging (Hort. 109)	1		
Elementary Vegetable Gardening (Hort. 111)			4
Tuber and Root Crops (Hort. 112)	3		
Commercial Vegetable Gardening (Hort. 113-115)	3	3	3
Systematic Olericulture (Hort. 116)	3		
Advanced Vegetable Gardening (Hort. 117)			1
Vegetable Forcing (Hort. 118)		3	
Elementary Floriculture (Hort. 121)		3	
Greenhouse Management (Hort. 122-123)	3	2	
Floriculture Practice (Hort. 124)			1
Greenhouse Construction (Hort. 125)		2	
Commercial Floriculture (Hort. 126-127)	3	3	
Garden Flowers (Hort. 128)			3
Amateur Floriculture (Hort. 129)			3
General Landscape Gardening (Hort. 131)			3
Plant Materials (Hort. 132)	2		
Plant Materials (Hort. 133)			2
Elements of Landscape Design (Hort. 134)		2	
Landscape Design (Hort. 135-136)	3	3	
Landscape Practice (Hort. 137)			3
History of Landscape Gardening (Hort. 138)		1	
Civic Art (Hort. 139)	2		
Horticultural Breeding Practice (Hort. 142)			1
Horticultural Research and Thesis (Hort. 143-145)	3	3	3
Horticultural Seminar (Hort. 146-148)	1	1	1
AGRONOMY:			
Cereal Crops (Agron. 101)	4		
Grain Judging (Agron. 102)		1	
Forage Crops (Agron. 103)			4
Crop Breeding (Agron. 104)			3
Methods in Crop Investigations (Agron. 105)	3		
Grading Farm Crops (Agron. 106)		3	
Genetics (Agron. 107)		4	
Crop Rotation (Agron. 108)		2	
Seminar (Agron. 109)		1	
Research and Thesis (Agron. 110)			
BOTANICAL GROUP:			
General Botany (Bot. 101)			4
Plant Anatomy (Morph. and Myc. 101)	3		
Systematic Botany (Morph. and Myc. 102)			3
Plant Morphology (Morph. and Myc. 103-105)	4	4	4
Mycology (Morph. and Myc. 106)			3
Methods in Plant Histology (Morph. and Myc. 107)		3	
Cytology (Morph. and Myc. 108)		3	
Advanced Taxonomy (Morph. and Myc. 109)	3		
Plant Physiology (Plt. Phy. 101-102)		4	3
Plant Ecology (Plt. Phy. 103)			3
Advanced Plant Physiology (Plt. Phy. 104-106)	4	4	4

ELECTIVE COURSES—Continued

TERM:	I	II	III
SCHOOL OF AGRICULTURE—Continued			
BOTANICAL GROUP—Continued			
Plant Micro-Chemistry (Plt. Phy. 107)		3	
General Plant Pathology (Plt. Path. 101)	3		
Methods in Plant Pathology (Plt. Pth. 102-104)	3	3	3
Advanced Plant Pathology (Plt. Path. 105-107)	4	4	4
Seminar in Pathology (Plt. Path. 108-110)	1	1	1
FORESTRY:			
Farm Forestry (For. 101)			3
ANIMAL INDUSTRY:			
Animal Husbandry (A. H. 101)		4	
Feeds and Feeding (A. H. 102)	4		
Management of Dairy Young Stock (A. H. 103)			3
Principles of Breeding (A. H. 104)		4	
Swine Production (A. H. 105)	3		
Meat and Meat Products (A. H. 106)		3	
Beef Production (A. H. 107)		3	
Sheep Production (A. H. 108)			3
Horse and Mule Production (A. H. 109)	3		
Advanced Judging (A. H. 110-111)		2	2
Advanced Breed Study (A. H. 112)			3
Animal Genetics and Statistical Methods (A. H. 113)	4		
Markets and Marketing (A. H. 114)		3	
Nutrition (A. H. 115)			2
Seminar (A. H. 116)		1	
Research and Thesis (A. H. 117-119)	2	2	2
Farm Poultry (P. H. 101)			4
Principles of Dairying (D. H. 101)	3		
Dairy Production and Barn Practice (D. H. 102)		3	
History and Development of Dairy Cattle (D. H. 103)			2
Farm Dairying (D. H. 104)	3		
Commercial Dairy Products (D. H. 106)		3	
Judging Dairy Products (D. H. 106)			2
Market Milk (D. H. 107)	3		
Advanced Course in Milk Testing (D. H. 108)		3	
Seminar (D. H. 109)		1	
Research and Thesis (D. H. 110-112)	2	2	2
General Bacteriology (Bact. 101-103	3	3	3
Special Bacteriology for Home Economics Students (Bact. 103-A)			3
Dairy Bacteriology (Bact. 104-106)	3	3	3
Advanced Bacteriology (Bact. 107-109)	2	2	2
Thesis (Bact. 110-112)	2	2	2
Seminar (Bact. 113-114)	1	1	1
Anatomy and Physiology (V. M. 101)	3		
Animal Diseases (V. M. 102)		4	
SOILS:			
General Geology (Geol. 101)	3		
Soil Physics and Management (Soils 101-102)		3	3
Soil Fertility and Fertilizers (Soils 103-105)	3	3	3
Soil Surveying and Classification (Soils 106)	3		
Soil Bacteriology (Soils 107)			4
Thesis (Soils 108-110)	2	2	2
Soil Technology (Soils 111-113)	3	3	3
Methods of Soil Investigation (Soils 114)			2
Seminar (Soils 115-116)		1	1

ELECTIVE COURSES—Continued

TERM:	I	II	III
SCHOOL OF AGRICULTURE—Continued			
FARM MANAGEMENT:			
Farm Management (F. M. 101-102)	3	3	
Studies in Agricultural Economics (A. E. 101)			3
Markets and Marketing (A. E. 102)		3	
Cooperative Marketing (A. E. 103)			3
Farm Accounting (A. E. 104)	4		
Elements of Community Study (R. O. 101-103)	3	3	3
Principles of Rural Organization (R. O. 104)	3		
ZOOLOGY:			
General Zoology (Zool. 101-102)	3	3	
Mammalian Anatomy (Zool. 102-A)			1
Normal Histology (Zool. 103)	4		
Embryology (Zool. 104-105)		4	4
Comparative Morphology of Vertebrates (Zool. 106)			3
Entomology (Zool. 107)			3
Insect Morphology (Zool. 108)	2		
Economic Entomology (Zool. 109-110)		4	4
Economic Entomology (Zool. 111-113)	5	5	5
Systematic Entomology (Zool. 114)	2		
Thesis (Zool. 115-117)	2	2	2
Insecticides and Their Application (Zool. 118)		2	
Medical Zoology (Zool. 119)	3		
Scientific Delineation and Preparations (Zool. 120-121)	1	1	
Horticultural Entomology (Zool. 122)			3
Seminar (Zool. 123-125)	1	1	1
Introduction to Aquiculture (Zool. 126)			
SCHOOL OF CHEMISTRY			
GENERAL CHEMISTRY:			
General Chemistry and Qualitative Analysis (Gen'l Chem. 101-103)	4	4	4
Advanced Qualitative Analysis (Gen'l Chem. 104)	3		
Quantitative Analysis (Gen'l Chem. 105-106)		3	3
Quantitative Analysis (Gen'l Chem. 107-108)	3	3	
Technical Analysis (Gen'l Chem. 109)		2	
Determinative Mineralogy and Assaying (Gen'l Chem. 110)			3
Metallurgical Calculations (Gen'l Chem. 111)		2	
Organic Chemistry (Gen'l Chem. 112-113)	3	3	
Advanced Organic Chemistry (Gen'l Chem. 114-116)	4	4	4
Advanced Quantitative Analysis (Gen'l Chem. 117-119)	4	4	4
INDUSTRIAL CHEMISTRY:			
Agricultural Chemistry (Ind. Chem. 101)			4
Agricultural Chemical Analysis (Ind. Chem. 102-104)	4	4	4
Advanced Agricultural Chemistry (Ind. Chem. 105-106)	5	5	5
Industrial Chemistry (Ind. Chem. 107-108)	5	5	
BIOLOGICAL CHEMISTRY:			
Physiological Chemistry (Bio-Chem. 101)	4		
Plant Biochemistry (Bio-Chem. 102)			3
PHYSICAL CHEMISTRY:			
Inorganic Chemistry (Phys. Chem. 101-103)	3	3	3
Elements of Physical Chemistry (Phys. Chem. 104-105)	4	4	
Colloidal Chemistry (Phys. Chem. 106)			4
Electrochemistry (Phys. Chem. 107)			4

ELECTIVE COURSES—Continued

TERM:	I	II	III
SCHOOL OF EDUCATION			
EDUCATION:			
Public Education in the United States (Ed. 101)	2		
Educational Psychology (Ed. 102)	5		
Survey of Teaching Methods (Ed. 103)		5	
Methods in Secondary English, History and the Languages (Ed. 104)			5
Methods in the Secondary School Sciences (Ed. 105)			5
Supervised Teaching of General Subjects (Ed. 106)	5 or	5 or	5
Principles of Secondary Education (Ed. 107)	3		
Theory of Vocational Education (Ed. 108)			3
EDUCATIONAL GUIDANCE:			
Educational Guidance (Ed. Guid. 101-103)	1	1	1
PSYCHOLOGY:			
General and Applied Psychology (Psy. 101-102)		2	2
AGRICULTURAL EDUCATION:			
Methods in Secondary Vocational Agric. (Ag. Ed. 101)			5
Problems in Agricultural Education (Ag. Ed. 102-104)	1	1	1
Supervised Teaching of Agriculture (Ag. Ed. 105)		5	
The Rural Community and Its Education (Ag. Ed. 106)		3	
Methods in Agricultural Extension (Ag. Ed. 107)			2
Agricultural Extension Practice (Ag. Ed. 108)	2 or	2 or	2
HOME ECONOMICS EDUCATION:			
Methods in Secondary Vocational Home Economics (H. E. Ed. 101)			5
Problems in Home Economics Education (H. E. Ed. 102-104)	1	1	1
Supervised Teaching of Home Economics (H. E. Ed. 105)		5	
History of the Family (H. E. Ed. 106-107)	2	2	
Education of Women (H. E. Ed. 108)			2
Child Care and Welfare (H. E. Ed. 108)			2
Methods of Home Economics Extension Work (H. E. Ed. 110)			2
INDUSTRIAL EDUCATION:			
Methods in Industrial Education for Secondary Schools (Ind. Ed. 101)			5
Problems in Industrial Education (Ind. Ed. 102)	2	2	2
Supervised Teaching of Industrial Subjects (Ind. Ed. 105)		5	
History of Industrial Education (Ind. Ed. 106)		3	
SCHOOL OF ENGINEERING AND MECHANIC ARTS			
DRAWING AND DESCRIPTIVE GEOMETRY:			
Freehand Drawing (Dr. 101)	1		
Mechanical Drawing (Dr. 102)	1	1	
Mechanical Drawing (Dr. 103)	2	1	
Engineering Drawing (Dr. 104)		1	
Descriptive Geometry (Dr. 105)			3
Descriptive Geometry (Dr. 106)	4		
Mechanical Drawing (Dr. 107)	1		
Drafting (Dr. 108)			1
Shades, Shadows, Perspective (Dr. 109)	2	2	

ELECTIVE COURSES—Continued

TERM:	I	II	III
SCHOOL OF ENGINEERING AND MECHANIC ARTS—Continued			
ELECTRICAL ENGINEERING:			
Elementary Electricity (E. E. 101)		2	2
Direct Current Theory (E. E. 102)	3	3	
Dynamos and Alternating Currents (E. E. 103)			3
Alternating Currents and Alternating Current Machinery (E. E. 104)	3	3	3
Lighting and Illumination (E. E. 105)			3
Electric Power Plants and Transmission (E. E. 106)		3	
Telephones and Telegraphs (E. E. 107)		2	
Wireless Telegraphy (E. E. 108)		1	
Electric Railways (E. E. 109)			3
Primary and Secondary Batteries (E. E. 110)		2	
Dynamo Electric Machinery (E. E. 111)			
Dynamo Electric Machinery (E. E. 112)		2	
ELECTRICAL ENGINEERING DESIGN:			
Direct Current Design (E. Des. 101)	1		5
Alternating Current Design (E. Des. 102)			
ELECTRICAL ENGINEERING LABORATORY:			
Electrical Engineering Laboratory (El. Lab. 101)		1	1
Electrical Engineering Laboratory (El Lab. 102)	1		
Electrical Engineering Laboratory (El. Lab. 103)		1	
Electrical Engineering Laboratory (El. Lab. 104)	2	1	2
Electrical Engineering Laboratory (El. Lab. 105)	2	2	2
Telephone Laboratory (El. Lab. 106)		1	
Wireless Laboratory (El. Lab. 107)		1	
EXPERIMENTAL LABORATORY:			
Testing (Exp. Lab. 101)		1	
Experimental Engineering (Exp. Lab. 102)			1
Cement Testing (Exp. Lab. 103)	1		1
Experimental Engineering (Exp. Lab. 104)	1	2	
HIGHWAY ENGINEERING:			
Highways (Hwys. 101)	2		
Highway Engineering (Hwys. 102)		3	4
Materials Laboratory (Hwys. 103)			1
HYDRAULIC AND SANITARY ENGINEERING:			
Hydraulics (Hyd. 101)			3
Hydraulics (Hyd. 102)	1		
Hydromechanics (Hyd. 103)	3		
Elements of Sanitary Engineering (Hyd. 104)	3		
Water Supply (Hyd. 105)		3	
Sewerage (Hyd. 106)			4
Hydraulic Design (Hyd. 107)			1
Drainage (Hyd. 108)			1
Drainage (Hyd. 109)			1
Advanced Drainage (Hyd. 110)			2
MACHINE DESIGN:			
Elementary Machine Design (M. Des. 101)	2		
Machine Design (M. Des. 102)		3	
Machine Design (M. Des. 103)			4
Kinematics of Machinery (M. Des. 104)			3
Design of Farm Machinery (M. Des. 105)		3	3
MATHEMATICS:			
Trigonometry (Math. 101)	5		
Solid Geometry and Spherical Trigonometry (Math. 102)	5		
Analytic Geometry (Math. 103)		5	5

ELECTIVE COURSES—Continued

TERM:	I	II	III
SCHOOL OF ENGINEERING AND MECHANIC ARTS—Continued			
MATHEMATICS—Continued			
Advanced Algebra (Math. 104)	3		
Calculus (Math. 105)	2	5	5
Algebra (Math. 106)	3		
Plane Trigonometry (Math. 107)		3	
Plane Analytic Geometry (Math. 108)			3
Plane Analytic Geometry (Math. 109)	3		
Calculus (Math. 110)		3	3
Solid Geometry (Math. 111)			3
Differential Equations (Math. 112)		3	
Least Squares (Math. 113)			2
Estimates and Costs (Math. 114)	1		
Astronomy (Math. 115)		3	
MECHANICAL ENGINEERING:			
Technical Instruction (M. E. 101)	1	1	
Steam Engines, Boilers and Dynamos (M. E. 102)	3		
Technical Mechanics (M. E. 103)		2	
Heat Engineering (M. E. 104)	2		
Heat Engineering (M. E. 105)		3	3
Heating and Ventilation (M. E. 106)			3
Marine Engineering (M. E. 107)			2
Steam Turbine Engineering (M. E. 108)			2
Gas Engines (M. E. 109)			4
MECHANICS AND MATERIALS OF CONSTRUCTION:			
Graphic Statics (Mech. 101)		3	
Analytical Mechanics (Mech. 102)			3
Mechanics of Engineering (Mech. 103)	5		
Mechanics of Engineering (Mech. 104)		2	2
Materials of Construction (Mech. 105)		2	
PHYSICS:			
Mechanics and Sound (Phys. 101)	4		
Electricity and Magnetism (Phys. 102)		4	
Heat and Light (Phys. 103)			4
General Physics (Phys. 104)	2	2	2
PHYSICS LABORATORY:			
Mechanics and Sound (Phys. Lab. 101)	1		
Electricity and Magnetism (Phys. Lab. 102)		1	
Heat and Light (Phys. Lab. 103)			1
General Physics (Phys. Lab. 104)	1	1	1
RAILWAY ENGINEERING:			
Railway Curves (Rwys. 101)		3	
Railway Earthwork (Rwys. 102)			2
Railway Surveying (Rwys. 103)			2
Railway Economics (Rwys. 104)		3	
SHOP PRACTICE:			
Woodwork (Shop 101)	1	2	1
Woodwork (Shop 102)	1	1	
Woodwork (Shop 103)	1		
Woodwork (Shop 104)		1	
Blacksmithing (Shop 105)		2	
Blacksmithing (Shop 106)		1	
Forging and Pipe-fitting (Shop 107)			1
Foundry Work (Shop 108)			2
Machine Work (Shop 109)	1	1	1
Machine Work (Shop 110)	3	2	
Machine Work (Shop 111)	1	1	

ELECTIVE COURSES—Continued

TERM:	I	II	III
SCHOOL OF ENGINEERING AND MECHANIC ARTS—Continued			
STRUCTURAL DESIGN:			
Elementary Structural Design (Str. Des. 101)		3	3
Structural Design (Str. Des. 102)	3	3	3
Structural Design (Str. Des. 103)	4	3	4
Masonry and Concrete (Str. Des. 104)		5	
Design of Farm Structures (Str. Des. 105)		3	3
School Architecture (Str. Des. 106)			4
Farm Buildings (Str. Des. 107)	2		
SURVEYING:			
Surveying (Surv. 101)		2	
Surveying (Surv. 102)			1
Surveying (Surv. 103)	2		
Surveying (Surv. 104)	1		
Advanced Surveying (Surv. 105)		4	
Advanced Surveying (Surv. 106)			1
Topographic Surveying (Surv. 107)	1		
Geodesy (Surv. 108)			2
Geodesy (Surv. 109)			1
Elementary Surveying (Surv. 110)			1
Elementary Surveying (Surv. 111)			1
SCHOOL OF HOME ECONOMICS			
FOODS:			
Preparation and Service of Foods (Foods 101)			6
Advanced and Experimental Cookery (Foods 102-103)		4	4
Nutrition (Foods 104)		5	
Dietetics (Foods 105)			5
Catering (Foods 106)			3
TEXTILES:			
Textiles (Tex. 101)		1	
Laundering (Tex. 102)	2		
Advanced Textiles (Tex. 103)			1
CLOTHING:			
Garment Construction Cloth. 101)	2		
Drafting and Elementary Dress Design (Cloth. 102)	4		
Dressmaking (Cloth. 103)		3	
Advanced Dressmaking (Cloth. 104-105)	2	2	
Draping and Advanced Technique of Clothing (Cloth. 106)	5		
Tailoring (Cloth. 107)		3	
Millinery (Cloth. 108)		3	
ART:			
Composition and Design (Art 101)		2	
Freehand Perspective (Art 102)	2		
Costume Design (Art 103)			3
Art and Handicraft (Art 104)	2		
Home Architecture and Decoration (Art 105)	2		
History of Ornament and Design (Art 106)	2		
HOME MANAGEMENT:			
House Administration (H. M. 101-102)	3	3	
Home Management (Practice House) (H. M. 103)			5
Lunchroom Management (H. M. 104-105)	3	3	
Marketing and Buying (H. M. 106)		2	
Home Nursing and First Aid (H. M. 107)		3	

ELECTIVE COURSES—Continued

TERM:	I	II	III
SCHOOL OF LIBERAL ARTS			
ENGLISH LANGUAGE AND LITERATURE:			
Composition and Rhetoric (Eng. 101-103)	3	3	3
Technical Writing and Scientific Thought (Eng. 104-106)	2	2	2
Nineteenth Century Poetry (Eng. 107-108)	3	3	
The Essay (Eng. 109)			3
English Words (Eng. 110)	3		
Literature in America (Eng. 111-112)		3	3
Novelists of the Nineteenth Century (Eng. 113-114)	3	3	
The Short Story (Eng. 115)			3
Early English Drama (Eng. 116)	3		
Elizabethan Drama (Eng. 117-118)		3	3
Modern English Drama (Eng. 119-120)	3	3	
Technique of the Drama (Eng. 121)			3
ANCIENT LANGUAGES AND LITERATURES:			
Beginners' Greek (A. L. 101-103)	3	3	3
Grammar, Composition, and Translation of Selected Prose Works (A. L. 104-106)	3	3	3
Greek Literature and Composition (A. L. 107-109)	3	3	3
Greek Drama (A. L. 110-112)	3	3	3
Latin Prosody and Methology (A. L. 121-123)	3	3	3
Latin Grammar, Composition, and Translation (A. L. 124-126)	3	3	3
Study of Roman Life and Customs (A. L. 127-129)	3	3	3
Critical Study of Latin Drama (A. L. 130-132)	3	3	3
MODERN LANGUAGES AND LITERATURES:			
Elementary French (M. L. 101-103)	3	3	3
Grammar Continued (M. L. 104-105)	3	3	3
Scientific French (M. L. 107-109)	3	3	3
Development of the French Novel (M. L. 110-112)	3	3	3
Seventeenth Century French Drama (M. L. 113)	3		
Eighteenth Century French Drama (M. L. 114)		3	
Nineteenth Century French Drama (M. L. 115)			3
History of French Literature (M. L. 116-118)	3	3	3
French for Engineers (M. L. 119-121)	5	5	5
Beginning German (M. L. 121-123)	3	3	3
Second Year German (M. L. 124-126)	3	3	3
Scientific German (M. L. 127-129)	3	3	3
Goethe and the Novel (M. L. 130)	3		
Schiller and the Drama (M. L. 131)			3
Lessing and German Prose (M. L. 132)	3		
Heine and German Poetry (M. L. 133)			3
History of German Literature (M. L. 134-136)	3	3	3
German for Engineers (M. L. 137-139)	5	5	5
Elementary Italian (M. L. 138-140)	3	3	3
Spanish Grammar, Conversation (M. L. 141-143)	3	3	3
Thorough Knowledge of Grammar (M. L. 144)	3		
Reading and Conversation (M. L. 145)		3	
Letter Writing (M. L. 146)			3
Vocabulary of Trade (M. L. 147-148)	3	3	
Business Correspondence and Etiquette			3
Methods of Advertising in South America and Mexico Compared with Those of the U. S. (M. L. 150)	3		
Study of Commercial Development (M. L. 151-152)		3	3
Early Spanish Literature (M. L. 153-154)	3	3	
Seventeenth and Eighteenth Century Literature (M. L. 155)			3

ELECTIVE COURSES—Continued

TERM:	I	II	III
SCHOOL OF LIBERAL ARTS—Continued			
MODERN LANGUAGES AND LITERATURES—Con.			
Spanish Literature After the Eighteenth Century (M. L. 156)		3	
Literature of Spanish-Speaking Countries (M. L. 157)			3
Spanish for Engineers (M. L. 158-160)	5	5	5
HISTORY AND POLITICAL SCIENCE:			
Current History (H. 101-103)	1	1	1
American Colonial History (H. 104)	2		
American Civil War and Reconstruction (H. 105)		2	
Development of American Nationality (H. 106)			2
Latin American Republics (H. 107)			2
Modern and Contemporary History (H. 109-111)	2	2	2
Imperialism and World Politics (H. 112)		2	
Origins and Issues of the World War (H. 113)			2
The Far East (H. 114-115)		2	2
Epochs in European History (H. 116-118)	2	2	2
Historiography (H. 119-121)	2	2	2
Government of the United States (Pol. Sc. 101-103)	2	2	2
American State Government (Pol. Sc. 104-105)	2	2	
Constitutional Law of United States (Pol. Sc. 106-108)	2	2	2
Governments of Europe (Pol. Sc. 109-110)	2	2	
Municipal Government (Pol. Sc. 111-112)		2	2
American Diplomacy (Pol. Sc. 113-115)	2	2	2
International Law (Pol. Sc. 116-118)	3	3	3
Political Parties and Practical Politics (Pol. Sc. 119-120)	2	2	
Contemporary Political Problems of the United States (Pol. Sc. 121)			2
American Political Ideals (Pol. Sc. 122-123)	2	2	
Research in Political Science (Pol. Sc. 124-126)	2	2	2
ECONOMICS AND SOCIOLOGY:			
Elements of Economics (Econ. 101-102)	3	3	
Corporation Finance (Econ. 103)	2		
Money and Banking (Econ. 104)		2	
Public Finance and Taxation (Econ. 105)			2
Economic History of the United States (Econ. 106)	3		
Rural Economics (Econ. 107)		2	
Elements of Accounting (Econ. 108)		3	
Advanced Accounting (Econ. 109)			3
Commercial Law (Econ. 110-112)	3	3	3
Elements of Sociology (Soc. 101)		3	
Charities and Corrections (Soc. 102)			3
Rural Sociology (Soc. 103)			3
Social Psychology (Soc. 104)	3		
Social Psychology (Soc. 105)		3	
Logical Aspects of Sociology (Soc. 106)			3
Philosophical Aspects of Sociology (Soc. 107)	3		
Philosophical Aspects of Sociology (Soc. 108)		3	
Ethical Aspects of Sociology (Soc. 109)			3
JOURNALISM:			
News Writing (Jour. 101-102)	3	3	
The Daily Paper (Jour. 103)			3
History of Journalism (Jour. 104)	1		
Newspaper Editing (Jour. 105-107)	2	2	2
News and Editorial Writing (Jour. 108-110)	3	3	3
The Country Newspaper (Jour. 111)	2		
The Trade Journal (Jour. 112)		2	
Feature Writing (Jour. 113)	3		

ELECTIVE COURSES—Continued

TERM:	I	II	III
SCHOOL OF LIBERAL ARTS—Continued			
JOURNALISM—Continued			
Agricultural and Industrial Feature Writing (Jour. 114-115)		3	3
Principles of Journalism (Jour. 116)	1		
Business Management, Circulation, and Advertising (Jour. 117-118)		1	1
Head Writing, Make-up, and Mechanical Details (Jour. 119)	2		
Practical Newspaper Operation (Jour. 120-121)		5	5
PUBLIC SPEAKING:			
Reading and Speaking (P. S. 101-103)	1	1	1
Oratory (P. S. 104-106)	1	1	1
Extempore Speaking (P. S. 107-109)	1	1	1
Debate (P. S. 110-112)	1	1	1
Oral Reading (P. S. 113-115)	2	2	2
Oral Technical English (P. S. 116-118)	3	3	3
Advanced Oral Technical English (P. S. 119-121)	3	3	3
LIBRARY SCIENCE:			
Library Methods (L. S. 101)	1		
Advanced Library Methods (L. S. 102)		2	
MUSIC:			
		3	
DEPARTMENT OF MILITARY SCIENCE AND TACTICS		2	
		2	
Basic Reserve Officers' Training Corps (M. I. 101)	2		2
Basic Course (M. I. 102)	2		2
Advanced R. O. T. C. (M. I. 103)	3		3
Advanced R. O. T. C. (M. I. 104)	3		3

DEPARTMENT OF PHYSICAL EDUCATION AND RECREATION

The Department of Physical Education and Recreation has been organized to control all physical training, recreation, intramural, and intercollegiate athletics. All work is closely coördinated and the ideal is to see that every man in the institution gets opportunities to take part in competitive sports. The plan under which the department is to operate may be summed up as follows:

1. A series of exercises arranged for every student in the institution and compulsory for all, the exercises to be based on mass exercises common in Germany and the Scandinavian countries. Neither the German nor Scandinavian system is to be used in its entirety, but a combination of the heavy gymnastic drills of the former with the lighter squad drills of the latter. All students will be given physical examination and placed in various classes according to their individual physical needs. Students will receive different kinds of work and be encouraged to take part in those games which provide the exercise of which they are most in need.

2. A general system of intramural athletics is carried out under a regular schedule with teams representing different units of the University. All students take part in one or more of these branches of sport and the University encourages enough sports to give each an opportunity. It is the aim of each class to have its own wrestling team, basket-ball team, baseball team, volley-ball team, track team, and so on for just as many teams as there are students to fill the positions. The games between these teams are carried out with regularity of schedule and supervision. Besides these, there are general competitions such as cross-country runs and interclass track meets in which representatives of all classes may compete at the same time. A regular playground is in process of construction on which will be available tennis courts, volley-ball courts, tether ball poles, stakes for pitching quoits, etc.

3. All physical training of the students, including mass exercises, intramural sports, intercollegiate competitions, and military training, henceforth are a part of the general educational system of the University.

For the present practically all general training, such as comes under the head of gymnastics and squad exercises, is conducted under direction of the Military Department.

DEGREES CONFERRED MAY 30, 1919

This does not include the list of degrees given in the Schools in Baltimore. Nor does it include the list of students of the Baltimore Schools. Lack of time for getting out the lists prevent such inclusion this year.

HONORARY

Doctor of Science

JAMES HARRIS ROGERS.....Hyattsville, Md.
FRANKLIN BYERS BOMBERGER.....College Park, Md.

Doctor of Agriculture

MERTON BENWAY WAITE.....Washington, D. C.

IN COURSE

Bachelor of Science

JOSEPH LEITER AITCHESON.....Burtonsville, Md.
KENNETH WARREN BABCOCK.....Hagersotown, Md.
CHESTER FREDERICK BLETSCH.....Washington, D. C.
GRACE BRUCE HOLMES.....Washington, D. C.
PAUL VALENTINE HORN (Class of 1918).....Mount Airy, Md.
RANSOM RUSH LEWIS, JR.....Frederick, Md.
ERSTON VINTON MILLER.....Hagerstown, Md.
GEORGE WESLEY NORRIS.....Baltimore, Md.
KENNETH CARLISLE POSEY.....Washington, D. C.
EARLE MILTON SAWYER.....Manila, Philippine Islands
JAMES WILMER STEVENS.....Baltimore, Md.
GEORGE RAY STUNTZ.....Washington, D. C.

Bachelor of Science in Agriculture

ROBERT LEE SELLMAN.....Beltsville, Md.

Bachelor of Science in Civil Engineering

CECIL HARLOW BACON.....Silver Springs, Md.
HOMER SIDNEY BERLIN.....Baltimore, Md.
WALTER ROBERTS HARDISTY.....Seabrook, Md.

Bachelor of Science in Electrical Engineering

MILTON CARROLL BROWN.....Sparrows Point, Md.
EDWIN WALKER HAND.....Berwyn, Md.

Bachelor of Science in Mechanical Engineering

HOWARD OWEN COSTER.....Coster, Md.
CHARLES EDWIN PAINE.....Washington, D. C.

CERTIFICATES IN TWO-YEAR COURSES ISSUED MAY 30, 1919

Agriculture

EMORY BRYAN CORKRAN.....Rhodesdale, Md.
THOMAS DAIL HOLDER.....Vienna, Md.
KURT FREDERICK MENZEL.....Washington, D. C.
PHILIP STEVENS RICHARDSON.....Williamsburg, Md.
HENRY LAFAYETTE UMBARGER.....Bel Air, Md.
HUGH ROBERTS WILMER (Class of 1918).....Faulkner, Md.

TESTIMONIALS OF MERIT AWARDED MAY 30, 1919

For distinguished achievement in the promotion of the agricultural interests of Maryland:

HOWARD MANN.....Howard County
DAVID GARFIELD HARRY.....Harford County
A. P. SNADER.....Carroll County

MEDALS AND PRIZES AWARDED MAY 30, 1910

For excellence in Debate. Medal offered by the Alumni Association:

EDWARD B. ADY.....Sharon, Md.

The Goddard Medal, for excellence in Scholarship and Moral Character—offered by Mrs. Annie K. Goddard James:

R. LEE SELLMAN.....Beltsville, Md.

For excellence in Debate, "President's Cup," offered by DR. H. J. PATTERSON:

POE LITERARY SOCIETY.

AWARDS OF MILITARY COMMISSIONS

MILTON CARROLL BROWN.....Major
HOMER SIDNEY BERLIN.....Captain
EARLE MILTON SAWYER.....Captain
CHARLES EDWIN PAINE.....Captain
EDWIN WALKER HAND.....First Lieutenant
WALTER ROBERTS HARDISTY.....Second Lieutenant

BATTALION ORGANIZATION

Battalion Staff

E. C. E. RUPPERT.....Major, R. O. T. C. Commanding
R. W. HELLER.....1st Lieut., R. O. T. C. Battalion Adjutant.
J. A. GRAY.....2nd Lieut., R. O. T. C. Battalion Supply Officer.

COMPANY OFFICERS AND NON-COMMISSIONED OFFICERS

Company A	*Company B*	*Company C*
	Captains	
WILBUR F. STERLING	JAMES H. BARTON	THEODORE L. BISSELL
	First Lieutenants	
JOHN E. KEEFAUVER	EDWARD E. DAWSON	DORIAN A. ETIENNE
	Second Lieutenants	
CHARLES P. WILHELM	STERLING E. ABRAMS	BRADFORD L. BURNSIDE

Additional Officer—EDWARD B. ADY, 2nd Lieutenant

NON-COMMISSIONED STAFF OFFICERS

EDWARD F. RUSSELL.....Battalion Sergeant Major
HOWARD A. SHANK.....Battalion Supply Sergeant
CHARLES L. MULLEN.....Corporal Bugler

Company A	*Company B*	*Company C*
	First Sergeants	
A. S. BEST	G. G. REMSBERG	C. E. MOORE
	Sergeants	
C. W. COLE	A. N. PRATT	R. V. HAIG
A. W. HINES	F. SLANKER	D. R. CALDWELL
C. E. DARNALL	P. S. FRANK	O. P. REINMUTH
H. L. BOSLEY	T. E. MARQUIS	L. W. BOSLEY
R. C. MCCENEY	L. E. CAUFFMAN	W. F. MCDONALD
C. D. MOLSTER	A. S. GADD	H. H. ANKERS
	F. R. CALDWELL	
	Corporals	
R. N. YOUNG	J. M. PRICE	K. T. BROACH
H. D. GILBERT	C. E. WHITE	R. J. STRANAHAN
J. H. PAINTER	W. A. BEACHLEY	A. J. NORTHAM
J. A. BURROUGHS	H. E. MCFADDIN	E. F. DARNER
J. A. MORAN	C. D. SASSCER	L. J. STABLER
A. D. KEMP	C. B. NOURSE	G. B. FITZGERALD
G. N. SCHRAMM	E. F. FROELICH	C. C. CRIPPEN
H. S. MATTHEWS	T. R. BETTS	H. E. LEVIN
		C. W. ENGLAND

REGISTER

Session 1919-1920

Graduate Students

Name	*Home*	
CHEN, CHUNJEN C.	Shanghai	China
HAAG, J. ROY.	Kingston	Rhode Island
JONES, JOHN P.	Davidsonville	Anne Arundel
LEUKEL, ROBERT W.	Brillion	Wisconsin
MARTIN, JOHN H.	Corvallis	Oregon
MILLER, E. V.	Hagerstown	Washington
NICKELS, CLARENCE B.	Artesia	Mississippi
PARFITT, ELLIOTT H.	Brooklyn	New York
RHODE, W. C.	Baltimore	Maryland
SANDO, CHARLES E.	Washington	District of Columbia
SMITH, ARTHUR M.	College Park	Prince George's
STANTON, THOMAS R.	Hyattsville	Prince George's

Senior Class

Name	*Home*	*County or State.*
ABRAMS, STERLING E.	Jersey City	New Jersey
ADY, EDWARD B.	Sharon	Harford
AXT, RIDGELY W.	Catonsville	Baltimore
BARTON, J. HALL.	Centreville	Queen Anne
BISSELL, THEODORE L.	Westover	Somerset
BURNSIDE, BRADFORD L.	Hyattsville	Prince George's
CARROLL, HENRY M.	Ashland	Baltimore
CHICHESTER, PETER W.	Aquasco	Prince George's
CLENDANIEL, GEORGE W.	Kennedyville	Kent
CONYNGTON, JOHN.	Berwyn	Prince George's
DAVISON, BAUSSON.	Riverdale	Prince George's
DAWSON, EDWARD E.	Trappe	Talbot
DAY, FRANKLIN D.	Burdette	Montgomery
DOWNIN, THOMAS V.	Williamsport	Washington
DRAWBAUGH, JOHN R.	Washington	District of Columbia
ELLIOTT, CHARLES S.	Westover	Somerset
EPPLEY, GEARY F.	Washington	District of Columbia
ETIENNE, ARTHUR D.	Berwyn	Prince George's
EZEKIEL, WALTER.	Landover	Prince George's
GRAY, JOSEPH A.	Brownville	Washington
HARTSHORN, HOSMER P.	Kensington	Montgomery
HICKS, WILLIAM P.	Govans	Maryland
HOCKMAN, GEORGE B.	Hagerstown	Washington
HOOK, ELIZABETH G.	College Park	Prince George's
JONES, ALLEN S.	Washington	District of Columbia
KEEFAUVER, JOHN E.	Berwyn	Prince George's
KNODE, JOHN S.	Baltimore	Maryland
KNODE, ROBERT T.	Baltimore	Maryland
LANGRALL, JAMES H.	Baltimore	Maryland
MCDONALD, HARRY M.	Barton	Allegany
MATZEN, BRODER A.	Berwyn	Prince George's
MERRILL, GEORGE M.	Crisfield	Somerset
PERKINS, HANSON T.	Springfield	Prince George's
PRATT, ALGIO N.	Newark	New Jersey
RUPPERT, ERNEST C. E., JR.	Chevy Chase	District of Columbia
RIGGS, MAURICE T.	Rockville	Montgomery
SANDO, WILLIAM J.	Washington	District of Columbia
SEWELL, MILTON D.	Hyattsville	Prince George's
SNARR, WARDNEY C.	Washington	District of Columbia
STARR, JAMES H.	Washington	District of Columbia
STERLING, WILBUR F.	Crisfield	Somerset
TERNENT, SAMPSON S.	Lonaconing	Allegany

Junior Class

BLAND, HARRIET W.	Sparks	Baltimore
CALDWELL, DAVID R.	Washington	District of Columbia
COLE, CHARLES W.	Towson	Baltimore
DIGGS, AUSTIN C.	Baltimore	Maryland
DINGMAN, JAMES E.	Berwyn	Prince George's
DONALDSON, EDMUND C.	Laurel	Prince George's
EDMONDS, LETHA G.	Rockville	Montgomery
EISEMAN, JOHN H.	Washington	District of Columbia
FRERE, FRANCIS J.	Tompkinsville	Charles

Name	*Home*	*County or State*
FUHRMAN, CARL J.	Brentwood	Prince George's
GARDNER, WM. THOMAS	Clear Spring	Washington
GOODWIN, LEONARD M.	Potsdam	New York
GRAHAM, JULIAN R.	Barclay	Queen Anne
HAIG, ROBERT V.	Riverdale	Prince George's
HAMKE, JULIUS C.	College Park	Prince George's
HELLER, ROBERT W.	Annapolis	Anne Arundel
HOLDER, THOMAS D.	Vienna	Dorchester
HOLTER, CECIL K.	Jefferson	Frederick
HOLTER, EDWARDS F.	Middletown	Frederick
JESTER, WILLIAM C.	Wilmington	Delaware
JOHNSON, CLARENCE E.	Brooklyn	New York
MACKERT, CHARLES L.	Sunbury	Pennsylvania
MANNING, ROGER C.	Branlywine	Prince George's
PEDDICORD, HERBERT R.	Dickerson	Montgomery
PERRY, DEWITT P.	Clear Spring	Washington
RAUSCH, ROBERT M.	Washington	District of Columbia
READING, JOSEPH G.	Rockville	Montgomery
SCHEUCH, JOHN D.	Washington	District of Columbia
SENER, HERMAN H.	Chewsville	Washington
SILBERMAN, HARRY A.	Washington	District of Columbia
SLANKER, FREDERICK	Washington	District of Columbia
SMITH, JOHN W.	Norfolk	Virginia
SNYDER, LEO WILLIAM	Washington	District of Columbia
STARKEY, EDGAR B.	Sudlersville	Queen Anne
STONESTREET, NICHOLAS V.	Rock Point	Charles
SULLIVAN, JERE H.	Newburyport	Massachusetts
THAWLEY, LEONARD H.	Laurel	Prince George's
THOMAS, RICHARD BRANSON	Washington	District of Columbia
TWILLEY, OTIS S.	Hurlock	Dorchester
WALKER, PAUL W.	Mt. Airy	Frederick
WILHELM, CHARLES P.	Baltimore	Maryland

Sophomore Class

ALLISON, BREWSTER	Stony Point	New York
AUSTIN, JAMES A.	College Park	Prince George's
AVERY, HELENA D.	Washington	District of Columbia
BAILEY, CALEB T.	Bladensburg	Prince George's
BARALL, WILLIAM LOUIS	Towson	Baltimore
BEACHLEY, RALPH H.	Middletown	Frederick
BEST, ALFRED S.	Harwood	Anne Arundel
BOSLEY, HARRY L.	Washington	District of Columbia
BOSLEY, LESTER W.	Washington	District of Columbia
BROACH, KEATOR T.	Ridgewood	New Jersey
BROWN, CHAUNCEY	Washington	District of Columbia
BURGESS, EDGAR A.	Thurmont	Frederick
BURROUGHS, JOHN A.	Clinton	Prince George's
BUSCK, PAUL G.	Washington	District of Columbia
BUTTS, JOHN A.	Loysburg	Pennsylvania
CALDWELL, FRANK R.	Washington	District of Columbia
CALVIN, GEORGE F.	Washington	District of Columbia
CANTER, FRANCIS D.	Aquasco	Prince George's
DARKIS, FREDERICK R.	Frederick	Frederick
DARNALL, CHARLES E.	Hyattsville	Prince George's

Name	*Home*	*County or State.*
DARNER, EDWIN F.	Hagerstown	Washington
DUVALL, WILLIAM M.	Baltimore	Baltimore City
DUNNING, ERNEST C.	Baltimore	Baltimore City
EDMONDS, HENRY GORDON.	Brookland	District of Columbia
ELDER, JAMES W.	Cumberland	Allegany
ENGLAND, CHARLES W.	Rising Sun	Cecil
ENSOR, HULDAH.	Sparks	Baltimore
EWALD, FRANCIS G.	Mt. Savage	Allegany
EZEKIEL, BERTHA.	Landover	Prince George's
FILBERT, EDWIN B.	Baltimore	Baltimore City
FISHER, HENRY.	Hillsboro	Caroline
GILBERT, HERBERT D.	Frederick	Frederick
GRAHAM, WALTER S.	Hyattsville	Prince George's
GUREVICH, HENRY J.	Washington	District of Columbia
HANFORD, REGINALD B.	Marion	Somerset
HINES, AUGUSTUS W.	Washington	District of Columbia
HODGINS, ROBERT J.	Union City	Pennsylvania
KEEN, HOWARD V.	Philadelphia	Pennsylvania
KEMP, ALLEN D.	Frederick	Frederick
KIRBY, WILLIAM W.	Washington	District of Columbia
MCDONALD, WILLIAM F.	Barton	Allegany
MALCOLM, WILBUR G.	Barton	Allegany
MATTHEWS, IRVING W.	Sparks	Baltimore
MILLER, ALBERT A.	College Park	Prince George's
MOHLHENRICH, EUGENE G.	Govans	Baltimore City
MOLSTER, CHARLES B.	Washington	District of Columbia
MOORE, CHARLES E., JR.	Roland Park	Baltimore City
MORGAN, JOHN A.	Frederick	Frederick
MORGAK, EDWIN K.	Washington	District of Columbia
MORGAN, PAUL T.	Baltimore	Baltimore City
MYERS, EDWIN H. L.	Washington	District of Columbia
NEIGHBOURS, HERBERT E.	Lewistown	Frederick
NEWELL, STERLING R.	Falls Church	Virginia
NORTHAM, ALFRED J.	Pocomoke	Worcester
NORWOOD, FREDERICK J.	Washington	District of Columbia
OWINGS, ELLIOTT P.	North Beach	Calvert
PAINTER, JOHN H.	Washington	District of Columbia
PARSLY, GEORGE M.	Brookeville	Montgomery
PETERMAN. WALTER W.	Clear Spring	Washington
POLK, LAWRENCE W.	Pocomoke	Somerset
PRICE, JOHN M., JR.	Centreville	Queen Anne
PUSEY, MERWYN L.	Baltimore	Baltimore City
RAEDY, MICHAEL L.	Washington	District of Columbia
REINMUTH, OTTO P. H.	Frederick	Frederick
REMSBERG, GERALD G.	Braddock Heights	Frederick
REYNOLDS, CLAYTON.	Port Deposit	Cecil
RUSSELL, EDGAR F.	Washington	District of Columbia
SASSCER, CLARENCE D.	Northkeys	Prince George's
SCHRAMM, GEORGE NELSON.	Cumberland	Allegany
SCOTT, JOSEPH G.	Princess Anne	Somerset
SHANK, HUGHES A.	Smithsburg	Washington
SMITH, GEORGE F.	Big Spring	Washington
SMITH, MILDRED P.	Brookland	District of Columbia
SNYDER, JAMES H.	Lewistown	Frederick

Name	*Home*	*County or State.*
STABLER, LAWRENCE J.	Washington	District of Columbia
STRANAHAN, ROBERT J.	Union City	Pennsylvania
SUTTON, ROLAND.	Ballston	Virginia
TARBERT, REBECCA.	Glencoe	Baltimore
WARD, JOSHUA B.	Jarrettsville	Harford
WHITE, WILFRED F.	Chevy Chase	Montgomery
YOSHIKAWA, MASANORI.	Hyuga	Japan
YOUNG, ROBERT N.	Washington	District of Columbia

Freshman Class

Name	*Home*	*County or State.*
ADY, ELIZABETH G.	Sharon	Harford
ALBRITTAIN, MASON C.	La Plata	Charles
ANDERSON, MARY P.	Washington	District of Columbia
BALDWIN, FRANCIS W., JR.	Huntingdon	Pennsylvania
BARNES, BENJAMIN F.	Princess Anne	Somerset
BEACHY, WALTER A.	Grantsville	Garrett
BELT, WILLIAM B.	Hyattsville	Prince George's
BENNETT, FRANK A.	Hagerstown	Washington
BENSON, GEORGE R.	Westminster	Carroll
BESLEY, ARTHUR K.	Baltimore	Baltimore City
BETTS, THOMAS R.	Oberlin	Ohio
BLANTON, FRANK M.	Elkton	Cecil
BLOCK, ALBERT.	Laurel	Prince George's
BOTELER, HOWARD M.	Laurel	Prince George's
BOYER, OLIVER P.	Perryman	Harford
BRANNER, CLAUDE E.	Pocomoke	Somerset
BRAUNGARD, JOHN E.	Hagerstown	Washington
BRAUNGARD, PAUL J.	Hagerstown	Washington
BREWER, CHARLES M.	College Park	Prince George's
BROMLEY, GEORGE R.	Stockton	Worcester
BROTHERS, MAURICE F.	Washington	District of Columbia
BROWN, LEO T.	Washington	District of Columbia
BUCHHEISTER, GEORGE G.	Leeland	Prince George's
BURROUGHS, JAMES E.	La Plata	Charles
CADLE, WILLIAM R.	Ijamsville	Frederick
CANNON, LLOYD P.	Preston	Caroline
CHAMBERS, DONALD L.	Baltimore	Baltimore City
CHAPPELL, KENNETH B.	Kensington	Montgomery
CHASE, RALPH H.	Washington	District of Columbia
CLAGETT, JOHN F.	Marlboro	Prince George's
CLARK, CHARLES F.	Pelham Manor	New York
CLARK, JOHN	Walkersville	Frederick
COHEN, ALFRED B.	Chestertown	Kent
COMPHER, CARLTON M.	Doubs	Frederick
COMPTON, STEPHEN J.	Westwood	Prince George's
CONKLING, JOHN F.	Baldwin	Baltimore
COOK, CHARLES S.	Frederick	Frederick
CROWTHER, ELIZABETH G.	Sparks	Baltimore
DIEKROEGER, FRED E.	Gerald	Missouri
DIETZ, GEORGE J.	Baltimore	Baltimore City
DONALDSON, DEWITT C.	Laurel	Prince George's

Name	*Home*	*County or State.*
DOWNIN, LAURAN P.	Hagerstown	Washington
ELLIOTT, JOSEPH W.	Westover	Somerset
ELLIS, L. HERMINIA.	Washington	District of Columbia
FINNEY, ARGYLE N.	Washington	District of Columbia
FITZGERALD, GILBERT B.	Princess Anne	Somerset
FITZGERALD, THOMAS H.	Princess Anne	Somerset
FLANAGAN, SHERMAN E.	Walkersville	Frederick
FRANK, PAUL S.	Falls Church	Virginia
FRANTZ, DONALD H.	Lutherville	Baltimore
FRIDINGER, NORMAN S.	Washington	District of Columbia
FUHRMAN, RUTH.	Washington	District of Columbia
GADD, ALBERT S.	Centreville	Queen Anne
GIFFORD, GEORGE E.	Rising Sun	Cecil
GILLESPIE, REES A.	Fort Washington	Prince George's
GLASS, JOHN D.	Conway Springs	Kansas
GRAVES, ERNEST A.	Washington	District of Columbia
GROTON, ALVEY B.	Pocomoke	Worcester
GROVES, JOHN.	Washington	District of Columbia
HAMMOND, JAMES D.	Alexandria	Alexandria
HARLEY, CLAYTON P.	Royersford	Pennsylvania
HARLOW, JAMES H.	Havre de Grace	Harford
HAWKINS, JOSEPH M., JR.	Harrisburg	Pennsylvania
HEATH, MARGUERITE F.	Baltimore	Baltimore City
HICKEY, WILLIAM F.	Delmar	Wicomico
HIGHTMAN, FLOYD H.	Burkittsville	Frederick
HIMMELHEBER, JAMES B.	Annapolis	Anne Arundel
HODGINS, HERBERT W.	Union City	Pennsylvania
HOLDEN, MILTON M.	Princess Anne	Somerset
HUTTON, JOSIAH J.	Brookeville	Montgomery
JONES, MILBURNE W.	Chestertown	Kent
KILLIAM, AUDREY.	Delmar	Wicomico
KISLIUK, DAVID E.	Washington	District of Columbia
KLINE, RALPH G.	Frederick	Frederick
KOOGLE, PAUL W.	Brunswick	Frederick
LATTA, JAMES B.	Washington	District of Columbia
LESCURE, JOHN M.	Harrisburg	Pennsylvania
LESCURE, WM. JOSEPH.	Harrisburg	Pennsylvania
LEVIN, HYMAN E.	Baltimore	Baltimore City
LIGHTER, RICHARD C.	Middletown	Frederick
LUCKEY, GEORGE J.	Trenton	New Jersey
MCBRIDE, AUSTIN A.	Middletown	Frederick
MCCALL, ELIZABETH L.	College Park	Prince George's
MCCENEY, ROBERT S.	Silver Spring	Montgomery
MCKEEVER, GALEN W.	Kensington	Montgomery
MARKER, RUSSELL E.	Hagerstown	Washington
MARQUIS, THEODORE E.	Washington	District of Columbia
MATHIAS, LEONARD G.	Hagerstown	Washington
MATTHEWS, HARRIS S.	La Plata	Charles
MELLOR, SIDNEY M.	Hagerstown	Washington
MELVIN, WILLIS G.	Havre de Grace	Harford
MIEDWIG, JOHN M.	Baltimore	Baltimore City
MILLER, THOMAS K.	Havre de Grace	Harford
MOLLOY, THOMAS J.	Catonsville	Baltimore City
MOORE, JOHN F.	Washington	District of Columbia

Name	*Home*	*County or State.*
MOSS, HOWARD I.	Govans	Baltimore City
MULLEN, CHARLES L.	Hagerstown	Washington
MULLINEAUX, PAUL T.	Mount Airy	Carroll
MUMFORD, JOHN WESLEY.	Newark	Worcester
NAUDAIN, MORGAN C.	Sparrow's Point	Baltimore
NELSON, ALMON S.	Washington	District of Columbia
NICHOLS, NORRIS N.	Delmar	Wicomico
NICHOLS, ROBERT S.	Delmar	Wicomico
NISBET, ANDREW N.	Baltimore	Baltimore City
NOCK, RANDOLPH M.	Stockton	Worcester
PARKS, FRED H.	Timonium	Baltimore
PORTER, ROBERT G.	Hyattsville	Prince George's
POSEY, MARION W.	La Plata	Charles
POWELL, ROBERT W.	Princess Anne	Somerset
QUAINTANCE, HOWARD W.	Washington	District of Columbia
QUAINTANCE, LELAND C.	Washington	District of Columbia
REED, RAYMOND B.	College Park	Prince George's
REINMUTH, KARL E.	Frederick	Frederick
REPPERT, RUTH I.	Takoma Park	District of Columbia
RICHARD, WILLIAM J.	Goldsboro	Caroline
ROGERS, JOSEPH H.	Hyattsville	Prince George's
ROSENBERG, CHARLES I.	Hyattsville	Prince George's
SCHAEFER, JOHN P.	Riverdale	Prince George's
SHAMBACH, FRANK M.	Baltimore	Baltimore City
SHAW, ELVA M.	Barton	Allegany
SHETZEN, WILLIAM.	Brooklyn	New York
SIMONS, ROLAND E.	Washington	District of Columbia
SKILLING, FRANCIS C.	Baltimore	Baltimore City
SLINGLAND, EARL J.	Allendale	New Jersey
SMITH, NELLIE O.	Brookland	District of Columbia
SPENCE, VIRGINIA I.	College Park	Prince George's
STANTON, GUY S.	Grantsville	Garrett
STOLL, CHARLES C.	Brooklyn	Baltimore
STRAKA, ROBERT P.	Homestead	Pennsylvania
STURGIS, WILLIAM C.	Snow Hill	Worcester
SWAN, GERALD A.	Washington	District of Columbia
TAVENNER, DONALD B.	Laurel	Prince George's
TERRY, HENRY M.	Washington	District of Columbia
THOMPSON, RUTH A.	Brookland	District of Columbia
TOADVINE, HARRY L.	White Haven	Wicomico
TOWBES, LOUIS H.	Washington	District of Columbia
TROY, VIRGIL S.	Centreville	Queen Anne
VAN SANT, BAYARD R.	Greensboro	Caroline
VINCENT, JAMES M.	Hyattsville	Prince George's
WALKER, LEWIS J.	Clarksburg	West Virginia
WALLIS, ALBERT G.	Frederick	Frederick
WATKINS, DONALD E.	Mount Airy	Carroll
WATKINS, ROBERT M.	Mount Airy	Carroll
WHITE, CHARLES E.	College Park	Prince George's
WICK, GEORGE A.	Washington	District of Columbia
WYNKOOP, JAMES C.	Washington	District of Columbia
YOWLER, CLARENCE J.	Smithsburg	Washington
ZEPP, WILLARD E.	Clarksville	Howard

Second-Year Agricultural Class

Name	*Home*	*County or State.*
ANKERS, HATCHER H.	Sterling	Virginia
BURT, RONALD T.	Westover	Somerset
CAUFFMAN, LAWRENCE E.	Merchantville	New Jersey
CHAPMAN, GEORGE B.	Woodstock	Virginia
DAVIS, MALCOLM.	Washington	District of Columbia
DONOVAN, CHARLES A.	Washington	District of Columbia
DOWS, ARTHUR P.	Riverside	Charles
EVANS, FRANK L.	Charleston	West Virginia
FROELICH, EDWIN F.	Crisfield	Somerset
FUSSELBAUGH, WILLIAM P.	Baltimore	Baltimore City
JAMES, WILLIAM B.	Hancock	Washington
JARRELL, CHARLES L.	Greensboro	Caroline
MYERS, ALLYN H.	Winchester	Virginia
NOURSE, CLARENCE B.	Alexandria	Virginia
RIDOUT, CHARLES D.	Annapolis	Anne Arundel

Second-Year Mechanic Arts Class

CRIPPEN, CLARENCE C.	Hurlock	Dorchester
EDEL, SAMUEL T.	Baltimore	Baltimore City
GRIEST, JAMES R.	Washington	District of Columbia
MCFADDIN, HARVIN E.	Hagerstown	Washington

First-Year Agricultural Class

ALDERTON, THOMAS E.	Takoma Park	Montgomery
BARRON, ALEXANDER M.	Collingswood	New Jersey
BELT, JAMES D.	Island Creek	Calvert
BENNETT, JAMES A.	Vienna	Dorchester
BRANNER, CECIL G.	Pocomoke	Somerset
CRONE, GEORGE A.	Jessup	Howard
DE YCAZA, JUAN M.	New York City	New York
FANCIULLI, JACK H.	Washington	District of Columbia
GUNDRY, RICHARD.	Catonsville	Baltimore
JOHNSTON, REGINALD G.	Geneva	New York
JONES, ARTHUR.	Davidsonville	Anne Arundel
KRAUK, EDWARD B.	Colgate	Baltimore
KUBITZ, ERICH.	Annapolis	Anne Arundel
MAHAN, JOSEPH F.	Forest Hill.	Harford
MELROY, MALCOLM B.	Washington	New Jersey
MUNCASTER, JOHN E.	Rockville	Montgomery
NORTHAM, A. FLOYD.	Pocomoke	Worcester
RICHARDSON, EDWARD M.	Washington	District of Columbia
STRAWN, FAKR W.	Landover	Prince George's
STUBBLEFIELD, WILLIAM L.	Washington	District of Columbia
TURNER, H*WARD W.	White Hall. L.	Harford
UMBARGER, GARDNER T.	Aberdeen	Harford
UMBARGER, MARVIN D.	Bel Air	Harford

First-Year Mechanic Arts Class

Name	*Home*	*County or State*
DIGGS, JOHN G. K.	Baltimore	Baltimore City
KETCHAM, JOHN R.	Solomons	Calvert
LEWIS, PAUL D.	Newport News	Virginia
OWENS, WILLIAM H.	Riverdale	Prince George's
SCHOTT, LOREN F.	Mount Rainier	Prince George's
SMITH, HARRY B.	Hurlock	Dorchester
STANFIELD, EDWARD F.	Roslyn	Baltimore

Unclassified

BARRETT, ALFRED J.	Washington	District of Columbia
BARROW, JOHN M.	Forest Hill	Harford
CHASE, FRANK S.	White Stone	Virginia
CLARKE, GLEN M.	Clarksville	Howard
COOK, ELIZABETH	Lanham	Prince George's
CRAWFORD, ARNOLD N.	Cecilton	Howard
CROOKS, WILLIAM S.	Baltimore	Baltimore City
GINGRICH, ROY M.	Palmyra	Pennsylvania
GROTON, THOMAS C.	Pocomoke	Worcester
ILITCH, DUSHAN M.	Padsg	Serbia
KILE, BRYAN Z.	Ridgeland	Mississippi
MACDONALD, ALEXANDER	Washington	District of Columbia
MALONE, RUTH F.	College Park	Prince George's
MANN, RIBORG G.	Washington	District of Columbia
MENZEL, KURT F.	College Park	Prince George's
MOORE, NATHAN C.	Rochester	New York
NELSON, GORDON V.	Newport News	Virginia
PAGANUCCI, ROMEO J.	Waterville	Maine
PERRIE, ALVIN L.	Clinton	Prince George's
POLLOCK, GEORGE F.	Boyds	Montgomery
ROEMER, JOHN P.	Milwaukee	Wisconsin
STEIDEL, OSCAR L.	Washington	District of Columbia
THOMPSON, BERTINA	Riverdale	Prince George's
TRAIL, OSCAR	Easton	Talbot
UMBARGER, HENRY L.	Bel Air	Harford
WILTSHIRE, TURNER H.	Baltimore	Baltimore City

Federal Board for Vocational Education Students (Rehabilitation)

BARTON, WILEY O.	Sugar Grove	Virginia
BEATY, OSCAR C.	Washington	District of Columbia
BIRD, JAMES F.	Jackson	Wyoming
BISHOP, JOHN	Washington	District of Columbia
BOYD, HARRY BURDETTE	Baltimore	Baltimore City
BRANNAN, THOMAS C.	Washington	District of Columbia
CANNON, AMOS P.	Salisbury	Wicomico
CAREW, JOHN N.	Baltimore	Baltimore City
CARTER, LLOYD S.	Westover	Somerset
CHALMERS, JAMES S.	Riverdale	Prince George's
COLMAN, PERRY H.	Washington	District of Columbia
COOPER, CHARLES H.	Hampstead	Carroll
COYLE, JOHN W.	East Syracuse	New York

Name	*Home*	*County or State.*
DALTON, ROBERT F.	Richmond	Virginia
EDMUNDS, HENRY R.	Farmsville	Virginia
FLYNN, LEO G.	College Park	Prince George's
FRANZ, RAYMOND E.	Baltimore	Baltimore City
FRIEND, CLARENCE	Hodgenville	Kentucky
GARNETT, ROBERT C.	Washington	District of Columbia
GRIGG, JOSEPH B.	Washington	District of Columbia
HANCOCK, HUGH	Huddleston	Virginia
HARNSBERGER, JOHN H.	Catlett	Virginia
HARRIS, FRANK B.	Baltimore	Baltimore City
HAWTHORNE, N. B., JR.	Round Hill	Virginia
HESS, OSCAR C.	Baltimore	Baltimore City
HOLLAND, ARTHUR H.	Pemberton	Virginia
HOLMES, ORLAND D.	Richmond	Virginia
HOWELL, CLARENCE L.	Chase City	Virginia
HUGHES, GEORGE D.	Baltimore	Baltimore City
JAMES, HOWARD V.	Williamsburg	Virginia
JUGCHEK, MAX	College Park	Prince George's
KESSLER, THOMAS J.	Baltimore	Baltimore City
KNAPPEN, JUDSON N. C.	Washington	District of Columbia
LEPREAUX, WILLIAM N.	Sterling	Virginia
LEWIS, LONGWORTH B.	Montross	Virginia
LINT, DAVID L.	Washington	District of Columbia
LIPSCOMB, THOMAS E.	Washington	District of Columbia
LUDLUM, SAMUEL L.	Bethesda	Montgomery
MORRIS, FLOYD B.	Centreville	Queen Anne
NEHRING, HENRY F.	Laurel	Prince George's
PHELPS, JOSEPH	Cambridge	Dorchester
PULLEN, JESSE P.	Martinsville	Virginia
REDMOND, JOHN E.	Frederick	Frederick
RYAN, WILLIAM T.	Washington	District of Columbia
RYBAK, JOSEPH	Baltimore	Baltimore City
SAUNDERS, WILLIAM G.	Landover	Prince George's
SCRUGGS, ALBERT T.	Depot	Virginia
SHAFFER, HARRY H.	Upperco	Baltimore
SHEPHERD, MATSON W.	Berwyn	Prince George's
SIMMONS, FRANK M.	Chicago	Illinois
SITWELL, HERBERT C. F.	Bedford	Virginia
SLEETH, JAMES R.	Ronceverte	West Virginia
SNELL, ROBERT L.	Naranja	Florida
TELMAN, JOHN	Baltimore	Baltimore City
TRIPLETT, CHARLES C.	Brunswick	Frederick
WEISS, EDWARD F.	Baltimore	Baltimore City
WHEEDLETON, WILLIAM C.	East New Market	Dorchester
WILBAND, SEWARD E.	Seattle	Washington
WINEBRENNER, JOSEPH J.	Cumberland	Allegany

Industrial Teacher Training Courses (Baltimore)

AULBACH, HARRY W.	Baltimore	Baltimore City
BAKER, EDWIN	Baltimore	Baltimore City
BALL, HARRY E.	Baltimore	Baltimore City
CALDWELL, H. L.	Baltimore	Baltimore City
CALL, LEO F.	Baltimore	Baltimore City
COOK, CONRAD	Baltimore	Baltimore City

Name	*Home*	*County or State.*
ENGEL, LOUIS	Baltimore	Baltimore City
GREEN, GEORGE W	Baltimore	Baltimore City
KERNER, WILLIAM	Baltimore	Baltimore City
KNOCHEL, ULYSSES S	Baltimore	Baltimore City
KUEBERTH, HARRY J	Baltimore	Baltimore City
PANETTIERE, VINCENT	Baltimore	Baltimore City
PRENDER, GEORGE	Baltimore	Baltimore City
RIVERS, HARRY CLERMONT	Baltimore	Baltimore City
SENDELBACH, JOHN F	Baltimore	Baltimore City
SKINNER, ROSS K	Baltimore	Baltimore City
SMITH, FERDINAND C	Baltimore	Baltimore City
TAYLOR, LEWIS T	Baltimore	Baltimore City
WALSH, M. L	Baltimore	Baltimore City
WILLHIDE, PAUL A	Baltimore	Baltimore City

STUDENTS IN THE SUMMER SCHOOL

ABELL, DAISY S	St. Imgoes	St. Mary's
ABELL, EMERALD	St. Imgoes	St. Mary's
ABRAMS, STERLING E	Hagerstown	Washington
ADAMS, ANNIE C	Baden	Prince George's
ADAMS, PHYLLIS G	Atholton	Howard
ADOMS, J. HOLLAND (Mrs.)	Waldorf	Charles
AIST, ELSIE	Cheltenham	Prince George's
ALRBITTAIN, MARIA L	La Plata	Charles
ALBRITTAIN, PEARL M	La Plata	Charles
ALLEE, HELEN M	Cumberland	Allegany
ANDREW, MILDRED A	Denton	Caroline
ATKINS, ALME L	La Plata	Charles
AXT, RIDGELY W	Baltimore	Baltimore City
BADEN, CLARA G	Brandywine	Prince George's
BADEN, EDNA I	Baden	Prince George's
BADEN, ELIZABETH L	Baden	Prince George's
BAITY, EARL C	Streett	Harford
BARALL, WILLIAM L	Towson	Baltimore
BARNES, LUCILLE M	Port Tobacco	Charles
BEALL, RUTH E	Poolesville	Montgomery
BEALL, VIRGIE M	Germantown	Montgomery
BEALL, WALLACE R	Libertytown	Frederick
BENNETT, FRANCES L. S	Churchton	Anne Arundel
BIDDINGER, VIRGINIA L	Walkersville	Frederick
BIGGS, IRMA V	Frederick	Frederick
BISSELL, DOROTHY E	Westover	Somerset
BLOOM, LOUISE M	Ellicott City	Howard
BOARMAN, SARA S	Bel Air	Harford
BODMER, JESSIE M	Poolesville	Montgomery
BOWERMAN, ROSALIE S	Loreley	Baltimore
BRANNER, RUTH M	Pocomoke City	Worcester
BROOKBANK, ANNIE V	Charlotte Hall	St. Mary's
BROWN, HOWARD	Bladensburg	Prince George's
BUCKEY, HATTIE McE	Frederick	Frederick
BUCKINGHAM, BERYL B	Mt. Airy	Carroll
BURDETTE, EUNICE E	La Plata	Charles
BURROUGHS, LOUISE	Clinton	Prince George's

Name	*Home*	*County or State.*
CALTRIDER, SAMUEL P.	Westminster	Carroll
CAMPBELL, SARAH M.	Baltimore	Baltimore City
CARRICK, MARY A.	Capitol Heights	Prince George's
CASTELLA, OLIVE W.	Riverdale	Prince George's
CHAPMAN, NANNIE T.	Spring Hill	Charles
CHRISTOPHER, NELLIE W.	Cambridge	Dorchester
CLEARY, HAZEL K.	Mt. Airy	Carroll
CLINE, ANNA G.	Frederick	Frederick
COLEMAN, CORA M.	Chester	Queen Anne's
COMBS, MARY E.	Ridge	St. Mary's
COMER, ALVERTA E.	Frederick	Frederick
CONYNGTON, JOHN	Berwyn	Prince George's
CRAMER, BLANCHE B. (Mrs.)	Glen Echo	Montgomery
CRAWFORD, RUBY	Quantico	Wicomico
CROMWELL, NANNIE W.	Poolesville	Montgomery
CROOKS, WILLIAM S.	Baltimore	Baltimore City
CROSS, JANIE A.	Westwood	Prince George's
CULBERTSON, MARY W.	Baltimore	Baltimore City
DAIL, JESSIE R.	Salem	Dorchester
DONAHOE, MAMIE C.	Massey	Kent
DORSEY, ETHEL A.	Beltsville	Montgomery
DOUB, ROSCOE M.	Middletown	Frederick
DOWNIN, THOMAS V.	Williamsport	Washington
DRAWBAUGH, JOHN R.	Washington	District of Columbia
EARNEST, HAZEL V.	Mt. Rainier	Prince George's
EBERT, CATHERINE G.	Baltimore	Baltimore City
EDWARDS, FANNIE I.	Massey	Kent
EDWARDS, MYRTLE E.	Bengies	Baltimore
EVANS, FRANK L.	Charleston	West Virginia
FILBERT, EDWIN B.	Baltimore	Baltimore City
FLYNN, LEO G.	Seat Pleasant	Prince George's
FOX, ESTON F.	Hagerstown	Washington
GALLAHAN, JESSIE M.	Brandywine	Prince George's
GARDINER, MARY M.	Indian Head	Prince George's
GILMER, MARY K.	Elkridge	Howard
GLISAN, SARAH M.	Libertytown	Frederick
GRAY, EFFIE J.	Nanjemoy	Charles
GRAY, J. ALEXANDER	Brownsville	Washington
GRAY, SADIE L.	Nanjemoy	Charles
GREER, MARY M.	Brentland	Charles
GRIMES, MAYE E.	Woodbine	Carroll
GUYTHER, VERA	Piney Point	St. Mary's
HACKETT, LAVADA E.	Vienna	Dorchester
HAISLIN, ETTA L.	Welcome	Charles
HANCOCK, HUGH	Huddleston	Virginia
HAND, MARY E.	Berwyn	Prince George's
HARMAN, CLAUDIA V.	Marydel	Caroline
HARRISON, MAE A.	Budds' Creek	St. Mary's
HART, CECILIA M.	Oakland	Garrett
HARTMAN, SARAH A.	Middletown	Frederick
HIGGINS, SARAH E.	Lonaconing	Allegany
HILL, ELSIE M.	Cumberland	Allegany
HILL, JAMES H.	Hyattsville	Prince George's
HIRSCH, LEO.	Baltimore	Baltimore City

Name	*Home*	*County or State.*
HOLLAND, ESTHER M.	Ridgely	Caroline
HOLTER, HELEN L.	Frederick	Frederick
HOUGHTON, MARGARET A.	Halethorpe	Baltimore
HUNT, LULA W.	Galloways	Anne Arundel
JOHNSON, ELLA	Long	Allegany
JONES, ALICE (Mrs.)	Capitol Heights	Prince George's
JONES, ALLEN S.	Washington	District of Columbia
KEEFAUVER, LLOYD C.	Hampstead	Carroll
KEIM, HORACE G.	Berlin	Worcester
KELLER, MINNIE S.	Buckeystown	Frederick
KEPLER, MYRIE K.	Middletown	Frederick
KERBY, KATHERINE E.	Brandywine	Prince George's
KERSEY, SARAH E.	Chester	Queen Anne's
KEY, INA M. (Mrs.)	Hyattsville	Prince George's
KING, ESTELLE M.	Chestertown	Kent
KING, OLIVE E.	Tippett	Prince George's
KNIPPLE, JULIUS G. C.	Westminster	Carroll
LANHAM, MARY E.	Seat Pleasant	Prince George's
LAUTERBACH, MAYNARD F.	Baltimore	Baltimore City
LAWRENCE, SARAH	Capitol Heights	Prince George's
LOVE, ANNA M.	Morganza	St. Mary's
LOWE, MARY F.	Mt. Rainier	Prince George's
MCCALL, ELIZABETH L.	College Park	Prince George's
MCNAMARA, KATHERINE	Cumberland	Allegany
MAGGIO, LENA V.	Frederick	Frederick
MALONE, RUTH F.	College Park	Prince George's
MARKER, RUSSELL E.	Hagerstown	Washington
MARTIN, RUTH	Hughesville	Charles
MARTZ, GRACE S.	Frederick	Frederick
MATTHAEI, DOROTHEA E.	Cumberland	Allegany
MATZEN, A. S. (Mrs.)	Berwyn	Prince George's
MATZEN, BRODER A.	New Market	Frederick
MEALEY, HELEN L.	Chestertown	Kent
MEEKS, HOPE W.	Hagerstown	Washington
MELLOR, SIDNEY M.	Washington	District of Columbia
MENZEL, KURT F.	Frederick	Frederick
MICHAEL, ELIZABETH E.	Ijamsville	Frederick
MOORE, ADDIE M.	Station "H"	Prince George's
MOORE, BELLE	Station "H"	Prince George's
MORELAND, FANNIE ESTELLE.	Gallant Green	Charles
MORGAN, EDWIN KING.	Washington	District of Columbia
MORRIS, ALMA	Abell	St. Mary's
MORRIS, SADIE AGNES	Abell	St. Mary's
MOXLEY, SADIE ELIZABETH.	Mt. Airy	Frederick
MULLINIX, MARGARET A.	Woodbine	Carroll
MURPHY, ANNA LOUISE.	Ijamsville	Frederick
MURPHY, JOSEPH DINSMORE.	Philadelphia	Pennsylvania
MURRAY, HARRIET LENORE.	Washington	District of Columbia
NELSON, DELIA BLANCHE.	Denton	Caroline
NORRIS, ANNA BYRD.	Fullerton	Baltimore
NORRIS, JANE EDITH	Great Mills	St. Mary's
NOURSE, CLARENCE BOICE.	Alexandria	Virginia

Name	*Home*	*County or State.*
OHLER, MARY ROZELLA	Taneytown	Carroll
PADGETT, MYRTLE ISABEL	Station "H"	Prince George's
PARRAN, ETHEL HELLEN	Island Creek	Calvert
PATRICK, ETHEL DOROTHY	Woodbine	Howard
PATTERSON, WM. CALVIN	College Park	Prince George's
PEARCE, L. NELLIE	Rock Hall	Kent
PEDEN, VIRGINIA	Batesville	Arkansas
PEEL, MOLLIE	Lonaconing	Allegany
PINCH, THOMAS M	Glendale	Prince George's
PRICE, JAY SAMUEL	Snow Hill	Worcester
PUMPHREY, ALICE LEE	Germantown	Montgomery
PUMPHREY, ESTHER	Germantown	Montgomery
QUEEN, MARIA CARMOLITA	Waldorf	Prince George's
RAEDY, MICHAEL LEO	Washington	District of Columbia
REDMOND, JOHN EDWARD	Frederick	Frederick
RISON, ELOISE VIRGINIA	Rison	Charles
RITZEL, MARY ELIZABETH	Westover	Somerset
ROBEY, MARY LUCILE	Croome	Prince George's
ROBINSON, M. EDITH	Brightwood	District of Columbia
ROCKHOLD, M. EVANGELINE	Friendship	Anne Arundel
ROE, LULU WINNIEFRED	Denton	Caroline
ROE, MILDRED CHAROLETTE	Denton	Caroline
SEEGER, PAULINE RANDALL	Frederick	Frederick
SELBY, HATTIE IDELLA	Cheltenham	Prince George's
SHAFFER, HARRY HARRISON	Upperco	Baltimore
SHORT, MILDRED BELL	Lewistown	Frederick
SHORT, MARY	Meridian	Mississippi
SHORT, MYRTLE REBECCA	Vienna	Dorchester
SIBLEY, FRANCES IRENE	Germantown	Montgomery
SMITH, GRACE ELIZABETH	Marydel	Caroline
SNYDER, BERTIE IRENE	Taneytown	Carroll
SNYDER, LILLIE MAE	Taneytown	Carroll
SOPER, ELSIE MAY	Beltsville	Montgomery
SPECHT, BETTIE ANN	Tuscarora	Frederick
STEINLE, KATHRYN LOUISE	Washington	District of Columbia
STEUART, CAROLINE LOUISE	Mitchellville	Prince George's
STRAWBRIDGE, VIOLA	Fawn Grove	Harford
TEMPLETON, KATHERINE A	Cumberland	Allegany
THONSSEN, RUBY ELLA	Washington	District of Columbia
TRASK, HENRY SHERWOOD	Washington	District of Columbia
TRASK, MARION BOOTH	Washington	District of Columbia
TROXELL, THOMAS	Gaithersburg	Montgomery
UMHAN, KATHARINE SOPHIE	Washington	District of Columbia
VAN HORN, MARIE ADELE	Brentwood	Prince George's
WALTERS, JOSEPHINE ELIZ	Chestertown	Kent
WATSON, MARY ELLEN	Malcolm	Charles
WELCH, MARY MYRTLE	Ridge	St. Mary's
WHEAT, MYRA CONNELLY	Chestertown	Kent
WHITE, HELEN ELIZABETH	Baltimore	Baltimore City
WHITE, JAMES WILSON	Gaithersburg	Montgomery
WICKHAM, HELENA	Nottingham	Prince George's
WOLFE, ELMER A	Union Bridge	Carroll

Name	*Home*	*County or State.*
WOODEN, LOUIS ELIZABETH	Baltimore	Baltimore City
WYNKOOP, J. CARTWRIGHT	Washington	District of Columbia
WYVILL, RUTH CLEVELAND	Marlboro	Prince George's
YOUNKIN, HAZEL GEVIENE	Grantsville	Garrett
ZANTZINGER, *Jr.*, OTWAY B.	Hyattsville	Prince George's

Summary of Student Enrollment at the Close of the Second Term, March 23, 1920

Graduate Students	12
Seniors	42
Juniors	41
Sophomores	82
Freshmen	148
Second Year Agricultural	15
Second Year Mechanic Arts	4
First Year Agricultural	23
First Year Mechanic Arts	7
Unclassified	26
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Industrial Teachers' Training Course	20
Summer School	201
Total	680
Duplications	25
Total Net Enrollment	655

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Any further information desired concerning the University of Maryland will be furnished upon application to DR. ALBERT F. WOODS, President, College Park, Md.

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